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THE
OPHTHALMIC REVIEW,
A
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OF
OPHTHALMIC SCIENCE.

EDITED BY

KARL GROSSMANN, M.D., AND PRIESTLEY SMITH,
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INDEX.

Original contributions are marked with an asterisk ().*

A

- Abraham and Story, micrococci in sympathetic ophthalmia, 128
 Aby, Ch., Petit's canal and the zonule of Zinn, 351
 *Accommodation, paralysis of, 182
 — spasm of, 97
 *Amaurosis fugax, 400
 — in injuries of the skull, 34
 — quinine, 32
 Amblyopia centralis, 310
 — diabetic, 315
 — hysterical, 191
 — toxic, visual field in, 190, 310, 315
 Amyloid tumours of conjunctiva, 282
 *Anæmia, retinal changes in, 303
 Anderson, T., Prismatic optometer, 197
 Angelucci, Thrombosis of retinal vein, 52
 Anterior chamber, traumatic evacuation of, 150, 151, 152
 — chamber, angle of, infiltrated by sarcoma-cells, 264
 Antiseptic atropine and eserine solutions, 58
 Aqueous, refraction after evacuation of, 150
 — source of, 149, 246, 413
 *Atropine and eserine in glaucoma. 78, 113, 295, 409
 — and eserine solutions, antiseptic, 58, 342
 Atrophy of optic nerve consecutive, from cerebral tumour, 63
 — ——— electricity in, 35
 — ——— after cuteric fever, 403
 * ——— ——— after erysipelas, 157
 * ——— ——— after hæmorrhage, 403
 * ——— ——— after injury, 402
 * ——— ——— from orbital periostitis, 403
 — ——— visual field in, 189
 — of half papilla with hemianopia, 183
 Ayres, W. C., New formation in lens, 94

B

- Becker, O., Anatomy of lens, 417
 Benson, A. H., Coloboma of choroid and nerve sheath, 223
 — Ectropion and transplantation of skin, 287
 Berry, G. A., Limitations of visual field, 186
 * ——— Practical test for light-sense, 175
 * ——— Remarks on two unusual forms of strabismus, 46
 Blindness, simulated, test for, 59
 Blix, M., A self-registering perimeter, 382
 *Boracic acid, 345, 363
 Brachet, Surgical treatment of granular ophthalmia, 196
 Bull, C. S., Syphilitic diseases of lachrymal apparatus, 220
 — Syphilitic lesions of orbit, 376
 — Treatment of scars of face and eyelids, 286

C

- Canal of Petit, anatomy of, 351
- Cataract, black, 296
- Cataract-extraction, sympathetic ophthalmitis after, 420
- extraction of, in capsule, 122
- maturation of, in dislocated lens, 97
- nuclear and lamellar, causation of, 128
- pathogenesis of, 88, 417
- * ——— practical remarks on, 21, 73
- so-called cure of, by electricity, 289
- Chancre of conjunctiva, 97
- Chisholm, J. J., Sympathetic amblyopia cured by neurotomy, 12
- Chorea, neuritis with, 63
- Choroid and nerve sheath, coloboma of, 223
- Choroidal hæmorrhage from injury without perforation, 158
- Choroido-retinitis, in inherited syphilis, 158
- Ciliary muscle, myoma of, 263
- Coloboma iridis, congenital, with microphthalmos, 184
- of choroid and nerve sheath, 223
- Colour-blindness, hysterical, 191
- Colour defects in consecutive atrophy, 63
- perception, centre for, 192
- perception, Pflüger's tests for, 251, 296
- perception, simultaneous contrast, 195
- Colours, blending of, in brain, 193
- visual field for, 316
- Conjunctiva, amyloid tumours of, 282
- bony tumour of, 228
- chancre of, 97
- epithelioma of, 245
- tubercle of, 385
- * Conjunctivitis caused by electric light, 308
- diphtheritic, treatment of, 155, 384
- * ——— gonorrhœal cured by iodoform, 184
- granular, surgical treatment of, 196
- * ——— purulent, treated by boracic acid, 363
- * ——— purulent, treated by iodoform, 214, 271, 307
- Cornea, nutrition of, 246
- opacity of, in glaucoma, 126
- removal of chip of iron from, by magnet, 243
- sloughy ulcer of, 130
- tumours of, 61, 96, 225
- Critchett, George, F.R.C.S., 423
- * ——— Practical remarks on cataract, 21, 73

D

- Derby, H., Cases of hydrophthalmos treated by iridectomy, 249
- Deutschmann, R., Chemistry of intraocular fluids, 148
- Iodoform in ophthalmic practice, 321
- Pathogenesis of cataract, 88
- Source of aqueous fluid, 149
- Tuberculosis of brain and eye, 13
- Diabetic amblyopia, 315
- cataract, maturation of, in dislocated lens, 97
- Dimmer, F., Diagnosis of detachment of vitreous, 352
- Diphtheritic conjunctivitis, 155, 384
- Diplopia uniocular, 17

Diseases of the eye, text-books by Wolf, Williams, Nettleship, 84.
156, 290

Dislocated lens, *see* lens

*Duboisin, 340

*Dujardin, Purulent ophthalmia cured by iodoform, 307

E

*Eales, Henry, Embolism of arteria centralis: restoration of vision,
139

*—— Primary retinal hæmorrhage in young men, 41

*—— and R. Saundby, Retinal changes in anæmia, 303

Entropion, treatment of, by transplantation of skin, 287

—— treatment of scars of face and lids, 286

Electric light, conjunctivitis caused by, 308

Electricity and so-called cure of cataract, 289

—— in atrophy of optic nerve and retinitis pigmentosa, 35

Electrolysis, 36

Electro-magnet, removal of chips of iron by, 243

Embolism of retinal artery, limitation of field, 186

*—— of retinal artery, re-establishment of circulation, 49, 139

Emmert, E., Etiology of myopia, 53

Entropion and trichiasis, 379, 409, 412

Episcleritis and spring-catarrh, 407

Epithelioma of cornea, 96

Erysipelas causing atrophy of disc, 157

*Eserine and atropine in glaucoma, 78, 113, 295, 409

—— and atropine solutions, antiseptic, 58

Excision followed by sympathetic ophthalmitis, 8, 11

Exophthalmos from hæmorrhage, 402

*—— from orbital periostitis, 402

*—— from orbital tumours in leucæmia, 317

—— unilateral, 65

—— without other symptoms of Graves's disease, 230

Eye and skull, 53

*Eyeball transfixed by knife-blade, 399

F

*Ferguson, H. L., Boracic acid in purulent conjunctivitis, 363

Field of vision, limitations of, 186

—— for colours, 316

Fluoresceine, experiments with, 246, 409, 413

Fuchs, E., Homatropine, 55

—— Opacity of cornea in glaucoma, 126

G

Galezowski, X., A new ophthalmoscope, 422

—— Ophthalmic megrim and thrombosis, 190

—— A dilator for lachrymal passages, 383

Gayet, M., Expulsion of iris, deformation of lens, 154

—— Photographs of ophthalmic specimens, 59

Glaucoma, after traumatic suspension of anterior chamber, 152

*—— an operation for reopening iris-angle, 333

*—— atropine and eserine in, 78, 113, 295, 409

—— cured by eserine, 61

—— debate on sclerotomy, 258

*—— following a blow on the eye, 273

- Glaucoma, iridectomy in hydrophthalmos, 249
 ——— limitation of field, 186
 ——— opacity of cornea in, 126
 ——— sclerotomy and filtration scars, 216, 258
 * ——— secondary, following dislocation of lens, 209
 Gorham, J., Blending of colours in brain, 193
 Gowers, W. R., Medical ophthalmoscopy, 121
 Granulations, surgical treatment of, 196
 Graves's disease, unilateral, 65
 * Griffith, A. H., Miscellaneous cases, 182, 243
 * Grossmann, Karl, An operation for reopening the iris-angle in glaucoma, 333
 * ——— Iodoform in ophthalmic practice, 141
 * ——— The iodoform treatment of blennorrhœa neonatorum, 214
 Gruening, E., Quinine amaurosis, 32
 Gunn, R. M., Electricity in atrophy of optic nerve and retinitis pigmentosa, 35

H

- Haab, O., Cortex-hemianopia, 251
 Haas, H. de, Conversion of light into visual impression, 347
 Hæmorrhage, choroidal, from injury without perforation, 158
 * ——— retinal, in young men, 41, 405
 Haensell, P., Inoculation of syphilis in rabbits, 319
 Hemianopia, from lesion of cortex, 251
 ——— horizontal, with atrophy of half the papilla, 183
 ——— unilateral, with spinal atrophy, 65
 ——— with loss of ocular movements, 292
 * Hereditary nystagmus, 239
 * Heredity and retinitis pigmentosa, 2, 26
 * Homatropine, 55, 343
 * Hutchinson, Jonathan, Retinitis pigmentosa and heredity, 2, 26
 Hyaloid artery, persistent, 246
 Hydrophthalmos, iridectomy in, 249
 * Hyoscine, 343
 Hypopyon-keratitis, 411, 412
 Hysterical amblyopia, 191
 * ——— ptosis, 403

I

- Injuries of skull with amaurosis, 34
 Inoculation of syphilis in rabbits, 319
 Intraocular fluids, chemistry of, 148
 ——— fluids, experiments with fluoresceine, 246, 413
 ——— ——— nutrition of cornea, 246
 ——— ——— sclerotomy and filtration scars, 216
 ——— ——— source of aqueous, 149, 413
 ——— hæmorrhage in young men, 41, 405
 ——— tumour, 99
 * Iodoform in ophthalmic practice, 141, 184, 271, 307, 321, 344
 Iridectomy in hydrophthalmos, 249
 Irido-cyclitis from hernia of iris, 409
 * Iris-angle, operation for reopening, 333
 Iris, coloboma of, with microphthalmos, 184
 ——— hernia of, 409
 * ——— removal of chip of iron from, by magnet, 244

V

- Iris, traumatic expulsion of, 154
- tubercle of, 19, 229
- tumour of, 264
- Iritis, sympathetic, after enucleation, 226

J

- Javal and Schioetz, A practical ophthalmometer, 38
- *Juler, H., Theory and practice of retinoscopy, 327

K

- Keratitis with hypopyon, 411, 412
- Knapp, H., Quinine amaurosis, 32
- Traumatic myopia, 152
- Kroemer, M., Antiseptic atropine and eserine solutions, 58
- Kubli, Th., Amyloid tumours of conjunctiva, 282

L

- Lachrymal apparatus, syphilitic diseases of, 220
- *——— dislocation of, 207
- gland, tumour of, 99
- passages, dilator for, 383
- sac, extirpation of, 34
- *Leber, Th., and Deutschmann, Amaurosis after injuries of the skull, 34
- Causation of nuclear and lamellar cataract, 128
- Origin of sympathetic affections, 7
- Lens, anatomy of, 417
- dislocated, maturation of cataract in, 97
- *——— dislocated, undergoing absorption, 400
- *——— dislocated, with secondary glaucoma, 209
- dislocated, useful vision through, 224
- new formation in, 94
- nutrition of, 413
- *——— removal of chip of iron from, by magnet, 243
- traumatic deformation of, 154
- Leuchæmia with exophthalmos from orbital tumours, 317
- Light, conversion of, into visual impressions, 347
- *Light-sense, a test for, 175
- *Little, D., Miscellaneous cases, 182, 243
- Loring, E. G., Connection between brain disease and choked disc, 280

M

- Macé and Nicati, visual field for colours, 316
- *Maconachie, G. A., Cases of purulent ophthalmia cured by iodoform, 271
- Magnet (*see* Electro-magnet)
- Massage, 86
- *McHardy, M. M., An improved self-registering perimeter, 107
- Medical ophthalmoscopy (Gowers), 121
- Megrim and thrombosis, 190
- Michel, C. E., Quinine amaurosis, 32
- Micrococci in sympathetic ophthalmia, etc., 128, 294
- in trachoma, 406
- Microphthalmos, with coloboma, 184
- Milles, W. J., Sympathetic ophthalmitis following cataract-extraction, 420

- Movements of eyelids and eyes, associated, 293
 ——— (apparent) of objects during involuntary movements of eyes, 16
 ——— loss of, with hemianopia, 292
 Myoma of ciliary muscle, 263
 Myopia, attitude of school children, 411
 ——— etiology of, 53
 ——— retinal changes in, 410
 ——— traumatic, 151

N

- Nasal duct (*see* lachrymal passages)
 Nettleship, Ed., Sympathetic ophthalmitis after excision, 8
 ——— Diseases of the eye, 290
 Neurotomy, sympathetic amblyopia cured by, 12
 Neuritis after head injuries, 159
 ——— axial, with spinal disease, 64
 ——— its connection with brain disease, 280
 ——— retrobulbar, 310
 ——— with chorea, 63
 ——— with purpura, 96
 ——— with tubercle of cerebellum, 20
 Nieden, A., Electrolysis, 36
 Noyes, H. D., so-called cure of cataract by electricity, 289
 *Nystagmus, hereditary, 239
 ——— miners', 291

O

- Ogneff, J., Histogenesis of retina, 15
 Oliver, C. A., Homatropine, 55
 Ophthalmitis, after ligature of carotid, 158
 ——— suppurative, 19, 389
 Ophthalmological Congress at Heidelberg, 405
 ——— at Eisenach, 410
 Ophthalmological Society, 16, 60, 95, 157, 225, 253, 291, 384
 Ophthalmometer (Javal and Schiøtz), 38
 Ophthalmoscope, new, by Galezowski, 422
 ——— new, by Juler, 230
 Optic nerve atrophy, *vide* atrophy
 ——— injections into, 409
 Optic neuritis, *vide* neuritis
 Optometer, prismatic, 197
 *Orbit, fracture of floor of, 401
 ——— syphilitic lesions of, 376
 *Orbital periostitis causing atrophy of optic nerve, 402
 ——— tumours in leuchæmia, 317
 Osterwald, A., Leuchæmia with orbital tumours, 317
 *Owen, Lloyd, An illustration of hereditary nystagmus, 239
 ——— sympathetic ophthalmitis after incision, 11

P

- Pagenstecher, H., Extraction of cataract in capsule, 122
 ——— Massage, 86
 Panophthalmitis, 19, 158, 389
 Paralysis of accommodation, 182
 Perimeter, self-registering (Blix), 382

- *Perimeter, self-registering (McHardy), 98, 107
- *——— self-registering (Priestley Smith), 370, 407
- Perineuritis, 19
- Pflueger, E., The nutrition of the cornea, 246
- Method of testing for colour perception, 251, 296
- Photographs of ophthalmic specimens, 59
- Poncet, F., Pterygium, 14
- Prismatic optometer, 197
- Pterygium, 14
- *Ptosis, hysterical, 403
- Purpura with neuritis, 96

Q

- Quinine amaurosis, 32

R

- Rava, Test for simulated blindness, 59
- Recent Literature, 66, 100, 131, 165, 199, 231, 264, 297, 322, 356, 391, 424
- Refraction after evacuation of aqueous, 150
- *——— retinoscopy in diagnosis of, 327
- traumatic myopia, 151, 152
- Renton, J. C., Sloughy ulcer of cornea, 130
- Retina, detachment of, limitation of field, 186
- detachment of, pathology of, 405
- detachment of, simulated by retrobulbar hæmorrhage, 355
- histogenesis of, 15
- peculiar disease of, 411
- tubercle of, 229
- venous pulsation in, 408
- with disease of optic nerve, 225
- *Retinal artery, embolism of, 49
- *——— changes in anæmia, 303
- changes in myopia, 410
- hæmorrhages, acute vascular disease, 95
- *——— hæmorrhage in young men, 41, 405
- peri-arteritis, 60
- vein, thrombosis of, 52
- vessels, tortuosity of, 225
- Retinitis, choroido, in inherited syphilis, 158
- electricity in, 35
- pigmentosa, 186
- *——— pigmentosa and heredity, 2, 26
- *——— pigmentosa and maternal shock, 30
- *Retinoscopy, theory and practice of, 327
- Retrobulbar hæmorrhage simulating retinal detachment, 355
- neuritis, 310
- Ringer and Tweedy, Homatropine, 55
- Risley, S. D., Homatropine, 55
- *Rockliffe, W. C., Conjunctivitis caused by electric light, 308
- Rothholz, Posterior staphyloma, 51

S

- Samelsohn, J., Centre for colour perception, 192
- Retro-bulbar neuritis: central amblyopia, 310
- Samuel, M., Diabetic amblyopia, 315
- *Saundby, R., and H. Eales, Retinal changes in anæmia, 303

- Scars of face and eyelids, treatment of, 286
 Schaefer, H., Homatropine, 55
 Schiess-Gemuseus, Traumatic myopia, 151
 Schoeler and Uhthoff, Experiments with fluorescein, 413
 Schoeler, H., Sclerotomy and filtration scars, 216
 Schreiber, P., Extirpation of lachrymal sac, 34
 Schweigger, Hysterical amblyopia, 191
 Sclerotomy, debate on, 253
 Simulated, blindness, test for, 59
 *Smith, Priestley, Atropine and eserine in glaucoma, 78, 113
 * ——— Dislocation of lens with secondary glaucoma, 209
 * ——— Glaucoma following blow on eye, 273
 * ——— Gonorrhœal ophthalmia cured by iodoform, 184
 * ——— New registering perimeter, 370
 * ——— Retinitis pigmentosa and maternal shock, 30
 *Snell, S., Dislocation of lachrymal gland, 207
 * ——— Elastic ligature in symblepharon, 399
 * ——— Miscellaneous notes and cases, 339, 399
 * ——— Stamp of fundus oculi, 198
 Spinal disease with axial neuritis, 64
 * ——— unilateral hemiopia, 65
 Stamp of fundus oculi, 198
 Staphyloma posticum, 51, 53
 *Story, J. B., Ophthalmological Congress at Heidelberg, 405
 * ——— ——— at Eisenach, 410
 *Strabismus, unusual forms of, 46
 Suppurative ophthalmitis, 19, 158, 389
 Suspensory ligament and Petit's canal, 351
 *Symblepharon, elastic ligature in, 399
 Sympathetic affections, origin of, 7, 409
 * ——— amblyopia cured by neurotomy, 12
 * ——— ophthalmia, micrococci in, 128
 * ——— ophthalmitis after excision, 8, 11, 226
 * ——— ophthalmitis following cataract-extraction, 420
 * ——— ophthalmitis, treatment of, 228, 410
 Syphilis, inoculation of, in rabbits, 319
 Syphilitic diseases of lachrymal apparatus, 220
 * ——— lesions of orbit, 376
 Szilagy, E., Simultaneous contrast, 195

T

- Tammamchef, Pathology and treatment of trichiasis, 379
 Tartuferi and Albertotti, Refraction after evacuation of aqueous, 150
 Theobald, S., Useful vision through dislocated lens, 224
 Thrombosis after ophthalmic megrim, 190
 * ——— of retinal vein, 52
 Tosswill, L. H., Ectropion and transplantation of skin, 287
 Trachoma, micrococci in, 406
 Trichiasis, pathology and treatment of, 379, 409, 412
 Tubercle of cerebellum with double optic neuritis, 20
 * ——— of choroid, 385, 386, 387
 * ——— of iris, 19, 229
 * ——— of brain and eye, 13
 Tumour at sclero-corneal junction, 61
 * ——— intraocular, 99
 * ——— of ciliary muscle, 263
 * ——— of conjunctiva, 228, 245, 282

- Tumour of cornea, 96, 225
- of iris, 261
- of lachrymal gland, 99
- of orbit, 376
- of orbit in leuchæmia, 317
- Tweedy and Ringer, Homatropine, 55

U

- Ulrich, R., Retrobulbar hæmorrhage simulating detachment of retina, 355
- Unicocular diplopia, 17

V

- Vision of sailors, tests of, 295, 160
- Visual Field (*see* field)
- impressions, conversion of light into, 347
- Vitreous, detachment of, 229, 352
- nutrition of, 413
- suppuration of, 408
- Vossius, A., Treatment of diphtheritic conjunctivitis, 155

W

- Williams, H. W., Diseases of the eye, 156
- Wolfe, J. R., Diseases of the eye, 84
- *Wood-White, E. W., Embolism of arteria centralis: re-establishment of circulation witnessed with the ophthalmoscope, 49
- Writing, physiology of, 408

Z

- Zonule of Zinn and Petit's canal, 351



PRIMARY RETINAL HÆMORRHAGE IN YOUNG MEN.*

BY HENRY EALES,

SURGEON TO THE BIRMINGHAM AND MIDLAND EYE HOSPITAL.

IN the *Birmingham Medical Review* for July, 1880, I published an article under the title of "Retinal Hæmorrhage Associated with Epistaxis and Constipation," believing that a close connection exists between these disorders. About three months later Mr. Jonathan Hutchinson read a paper on the same subject before the Ophthalmological Society, entitled "Primary Intraocular Hæmorrhage." A further acquaintance with the peculiarities of this group of cases inclines me to designate it "Primary Recurrent Retinal Hæmorrhage." The cases to which this communication refers, are instances of repeated intra-ocular hæmorrhage in young men, and the following are their principal features.

In each case it was the left eye which was primarily and chiefly affected. When first seen the vitreous was opaque from hæmorrhage into it. The fundus oculi was either invisible or only visible throughout a small portion of the upper part of the periphery, and here extravasations of blood were found in the retina, either quite recent or partially decolorised.

There was often a rapid diminution of the opacity of the vitreous, followed by a sudden recurrence of opacity from fresh hæmorrhage after a few weeks or months.

Many such recurrences occurred. In each case vision appeared to suffer only in proportion to the opacity of the vitreous. Between the attacks it sometimes recovered

* This paper was read at the International Medical Congress, London, 1881. It will appear in abstract in the Transactions of the Congress. H. E.

its normal acuity though *muscæ* were complained of and opaque shreds were still discoverable in the vitreous.

The vessels in each eye were found to be large and tortuous, especially the veins, which were also remarkably dark colored. This was confirmed in one case by my colleagues, Mr. Lloyd Owen and Mr. Priestley Smith.

The hæmorrhages were usually confined almost entirely to the extreme periphery of the retina, only very occasionally being found near the disc and then around the larger venous trunks. The yellow spot was not involved in any case. The extravasations were almost invariably large and of round or irregular form, not flame-shaped. They could often be seen to have proceeded from venous radicles which were obscured by them.

In two cases the right eye also became affected while the patient was under treatment; but less severely than the left. In one case glaucoma occurred and ultimately destroyed vision.

The ultimate result of these repeated extravasations was the formation of large, whitish, and sometimes quite glistening patches of degeneration at the periphery of the retina, with some degeneration of the chorio-capillaris, and occasionally small round circumscribed areas of detachment of the retina. In these spots the terminal branches of the retinal veins were sometimes lost; occasionally the veins could be seen passing over these areas, becoming here suddenly tortuous, in a remarkable manner, like corkscrews. On the areas of detached retina a branch of the retinal veins was invariably found, and more than once a many-tailed opacity of the vitreous was found to be attached to the veins at the most bulging point of the detachment. These facts lead me to infer that the hæmorrhages occur from the venous radicles or from the capillaries.

In no case has any condition like retinitis been seen to precede or to accompany these hæmorrhages. In some cases permanent opacity of the vitreous resulted.

Exciting Causes.—The attacks appear to have been excited by the following circumstances :—The recumbent posture, stooping, coughing, laughing, and especially over-exercise.

The General Condition of the Patient.—All were young men, the youngest being aged 14, the oldest 20. All have been subject to epistaxis, especially during the summer months ; all have had much trouble from constipation for some two or three years. In all cases the pulse was habitually under 60 per minute, but easily excited to rapidity. Sphygmographic tracings of the radial pulse in no case gave evidence of high arterial tension, and in one case appeared to denote low tension. Several times recurrences of retinal hæmorrhage have been found to coincide with a further slowing of the pulse (in one case on two occasions to 48) associated with increased trouble from constipation, and in one case with epistaxis, while periods of freedom from retinal hæmorrhage have been noticed to coincide with increase of the pulse rate to 72 and 82 and freedom from constipation.

Condition of the Heart.—In one case mitral incompetence existed, and in this case glaucoma occurred. In the other cases the heart presented no anomaly. The aortic 2nd sound was accentuated in only one case. The temporal artery was often very tortuous in these cases. Palpitation often occurred.

In no case has albuminuria been found, though in two cases the slightest doubtful opalescence of the urine on boiling with acetic acid took place. In these cases casts were more than once looked for but none were found. The urine often contained excess of phosphates and urates. In no case was any sugar found in the urine.

All of these lads were much troubled with dyspepsia, low spirits, want of energy and feelings of lassitude. Frontal headache of a throbbing character was commonly present. The use of alcohol in any form almost invariably gave rise to discomfort from giddiness and headaches.

Puffiness and discoloration around the eyes were often noticed, and were sometimes more marked just previous to an attack of retinal hæmorrhage. There was no evidence or suspicion of anæmia in any case. The blood was in all cases examined with the microscope, with or without the hæmocytometer, and the relative proportion of red and white corpuscles found to be normal. There was no evidence of hæmophilia, nor of any other blood condition known to be a probable cause of hæmorrhages. Variations of local circulation were common in these cases, such as cold feet and hands, flushing of the face especially after meals. I am indebted to Dr. R. Saundby for valuable assistance in determining the state of the blood, urine, and heart in these cases.

The Family History was in all cases destitute of any evidence of gout. Mr. Jonathan Hutchinson's view of the gouty diathesis being the cause of this condition is therefore not confirmed by my cases. Rheumatism was occasionally found. It is noteworthy that the fathers were in three cases found to have been very subject to epistaxis for many years when young. Spasmodic asthma was found on the father's side in one case. In one case, the father, and a brother, were confirmed drunkards.

From the absence of any evidence of any of the various blood conditions known to cause hæmorrhage; from the absence of albuminuria, diabetes, gout, syphilis, and of any high arterial tension; from the character of the hæmorrhage, and from the evidence of local variations of circulation; and from the slow pulse, constipation, flushing of the face, headache, and puffiness and discolouration of the eyes, I am inclined to attribute this combination of conditions to a neurosis affecting both the circulatory organs and the digestive system, leading on the one hand to partial inhibition of the muscular movements of the bowels, and to a vaso-motor contraction of the vessels of the alimentary canal, with inhibition of its secretory functions, thereby causing dyspepsia,

constipation, malnutrition; and on the other hand to a compensatory dilatation of the systemic capillaries, especially those of the head, and, in these cases, of the retina, causing over-distention of the venous system and systemic capillaries, with liability to rupture on the occurrence of any intensifying cause. Hence the headache, the epistaxis, the retinal hæmorrhages, and the tortuosity and fulness of the retinal vessels, and temporal artery.

The slowing of the pulse is also, I think, due to a neurosis, inasmuch as it appears to bear no relation to a state of high arterial tension. The fact of the fathers having been often subject to epistaxis, while this retinal affection appears only to occur in young men, suggests that this neurosis is inherited and transmitted in the male line. The more frequent occurrence of retinal hæmorrhage and epistaxis on the left side is, I think, due to the anatomical condition of the vessels, that is the origin of the common carotid artery on this side direct from the aortic arch, and the more circuitous course of the left innominate vein, both favouring a higher vascular tension on this side. That these cases are very rare is amply proved by the paucity of my own cases, and the fact that not a single fresh case has been seen among 12,000 cases treated at our hospital during the last twelve months. The occurrence of glaucoma in one of my own cases, and in one met with by Mr. Hutchinson, is, I think, interesting, especially when it is borne in mind that in Mr. Hutchinson's case the eye was excised, and hæmorrhages into the ciliary processes as well as into the retina were found.

Treatment. In treatment I have tried various remedies—such as digitalis, arsenic, iron, strychnia, belladonna, ergot, etc., but have found no decided evidence of their doing much good. I have therefore contented myself with treating the constipation with purgatives, and the dyspepsia with such remedies as the mineral acids com-

bined with bitter tonics. I have found rest for the eyes, abstinence from work, and change of air, of most benefit in this condition.

The foregoing statements are founded chiefly on the facts observed in four cases, which were very carefully noted, and were under observation for many months; three other cases, also in young men, of which I have less complete notes, tend to confirm them. It is remarkable that in no case has a similar condition been seen in a female; possibly the menstrual function acts as a safeguard against this serious malady.

CLINICAL NOTES AND REMARKS ON TWO UNUSUAL FORMS OF STRABISMUS.

BY

GEORGE A. BERRY, M.B., EDINBURGH.

I. Henry H., aged 41, (an out-patient at Moorfields, Aug. 21, 1880,) complains of double vision which began to manifest itself occasionally about 5 weeks ago, and has become persistent within the last fortnight.

Refraction: Emmetropia, with $V = \frac{20}{20}$ and J. 1 both eyes.

Convergence of the optic axes for ∞ , homonymous diplopia. Diplopia and relatively too great convergence up to well within 2 feet, beyond which single binocular vision. The diplopia for ∞ is connected by a prism of 10° — 12° and remains the same to either side. The left eye is used for fixation. Within the range of single vision a prism with the base up or down in front of one eye produces lateral as well as vertical relative displacement of the two images—the lateral amount is connected by a prism of 10° . The tendency to fusion is good as he is able to overcome by abduction (for ∞) a prism of fully 30° in the interest of binocular vision. The pupils are small and decidedly inactive.

Domestic troubles have greatly interfered with the patient's rest lately, and he has for some time past been in a very depressed state of mind, fretting, and even crying a good deal. I recommended him absolute rest from his

usual occupation, for a fortnight, to be spent, if possible, in the country, and at the same time prescribed a tonic. At the end of that time the abnormal convergence was very much less marked and did not occur within 3 feet. He did not come back a third time so that I am unable to say whether it disappeared entirely or not.

It is evident that this condition cannot be confounded with paresis of any ocular muscle, or with strabismus convergens, or myopia, and must I think be looked upon as one of *spasm of convergence*. It was probably brought about by some temporary irritation of the centre for convergence. The opposite condition, paresis of convergence, I have met with several times. In one case, a boy aged 15, (under Mr. Wordsworth at Moorfields), it existed along with paralysis of the superior oblique.

A curious circumstance in connection with the case of Henry H., was the condition of the tendon reflex—whilst it was apparently more marked than normal on the right side, it was entirely absent on the left. This observation was made independently by several other gentlemen present at the time, and there was no reason to suppose that the patient was deceiving us. It would be difficult to say, however, whether this was pathological or not, or had any connection with the condition which produced the spasm of convergence.

II. Samuel P., aged 22, (under Mr. Tay, at Moorfields, Aug. 9th, 1880,) complains of dimness in the sight of the left eye. This had come on along with twitchings of the same side of the face, a fortnight ago, and was ascribed to draught playing over the part.

He has divergence for $\infty = 3'''$, and generally uses the right eye for fixation. Refraction: Emmetropia (slight H.) with $V = \frac{20}{20}$ and J. 1 both eyes. Ophthalmoscopic appearances normal. Pupils motionless.

The divergence appears to have occurred suddenly, as he denies having squinted previously, and the dimness complained of is due to diplopia. The divergence disappears

entirely for near vision, with only the slightest indication of an outward deviation of the left eye when occluded. For objects at a reading distance the relation between accommodation and convergence is sufficient to give the proper direction to the axes and by so doing overcomes the divergence which exists at the zero-point of accommodation. Little or no work is left to fusion, that is to the power of overcoming difficulties in the way of binocular vision.

Why should divergence occur suddenly in an individual with emmetropia and good vision of both eyes? The following is, I believe, the explanation. The degree of divergence now found has been all along, or it may be, has gradually come to be, the position of equilibrium of the ocular muscles in this case; but up till recently it has been masked (except, perhaps, during intervals of absent mindedness) by the desire for distinct binocular vision which has been sufficiently strong to maintain parallelism. *But the power of fusion has suddenly become diminished, and is no longer able to overcome the divergence.**

In the divergence which often occurs along with myopia, the images of distant objects on the retinae are never sufficiently sharp to give rise to unconscious fusion. But that the power is not absent, is evidenced by the fact that in many cases, although there is perfect binocular vision for objects within the range of accommodation, still if one eye be occluded, it wanders outwards, often to an extreme degree. There is in fact, in such cases, *latent divergence overcome by fusion* when the object is at, or near, or within, the far point.

In the case under consideration there is *latent divergence overcome by the convergence associated with accommodation*, and therefore not even manifesting itself during fixation of a near object, though one eye is occluded. Why it should be that the normal relationship between

* In connection with this subject see an excellent paper by Krenchel: "Ueber die krankhaft herabgesetzte Fusionsbreite als Ursache des Schielens." (Von Graefe's Archiv, xix., pp. 142-155.)

convergence and accommodation, viz., that which exists in most cases of emmetropia, should be sufficient not only to produce a convergent movement of the normal extent, but over and above this, more or less, completely to overcome the extra divergence, is, it must be confessed, not thoroughly clear, but that such is the case is shown conclusively by the following :—

Rose C., aged 14 (Moorfields, Dec. 13, 1880), received a blow on the left temple, two years ago, and sometime afterwards discovered that the left eye was blind (Ophthalmoscopically optic atrophy). The left eye diverges 3" for ∞ . Right eye, refraction emmetropia, $V = \frac{20}{20}$ and J. 1. On fixing a near object (6" distant) the divergence of the left eye is entirely overcome.

Here as the left eye is blind, there can be no question of fusion, the requisite degree of convergence must be the result of the association with accommodation.

EMBOLISM OF ARTERIA CENTRALIS : RE-ESTABLISHMENT OF CIRCULATION WIT- NESSED WITH THE OPHTHALMOSCOPE.

BY E. W. WOOD-WHITE, M.B.,

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J. G., aged 31, was admitted as an out-patient of the Birmingham Eye Hospital, under the care of Mr. Solomon, on Nov. 14, 1881. He complained that while washing himself on the same morning, at about 8.30, he perceived a cloud pass across his right eye, and that in a few minutes vision in this eye was totally lost. He was seen at the Hospital at 9.30. The patient is a spare muscular man, with a marked antero-posterior curvature of the dorsal part of spine.

On ophthalmoscopic examination by the direct method, the fundus presented the appearance characteristic of embolism of the retinal artery, namely extreme pallor of disc, contraction, and beading of arteries and veins, in some places complete collapse of the vessels, alternating with portions of the blood column, and slight œdema of the retina. The eye had

not the faintest perception of light. Pressure was applied to the globe by the finger, with the object of ascertaining whether there was any pulsation of the vessels, but without result. In repeating the pressure I was much surprised to see the circulation suddenly re-established. I noticed a wave passing through all the vessels; the branches going to the upper part of the retina were almost immediately filled, but an appreciable interval—two or three minutes—elapsed before those going to the lower part of the retina resumed their normal appearance; the disc also quickly acquired its usual rosy tint; when, except for the œdema of the retina, the fundus seemed completely restored to its normal condition, pressure now producing the most marked arterial and venous pulsation; the patient exclaimed that he could see quite well. Vision was tested, and equalled $\frac{20}{40}$; the field of vision was found to be slightly contracted in its upper part, and has since continued so. On Nov. 16, the œdema had completely disappeared, and vision equalled $\frac{20}{20}$.

No history of rheumatism, scarlatina, or syphilis could be elicited. Cardiac examination revealed a marked impulse, a slight systolic bruit at the apex, conducted a few inches into the axilla, and a marked accentuation of the aortic, and pulmonary second sounds. All the other viscera seemed healthy.

The Case, as far as I know, is unique, in that the return of the circulation was observed with the ophthalmoscope at the moment of its occurrence. Many theories may be advanced to explain its remarkable termination. The embolus may never have reached the retinal, but may have lodged in the ophthalmic artery, and finally have been carried into one of its less important branches. I think, however, the fact that there was no subsequent œdema of the lids, that the upper part of the field of vision remained slightly contracted, and that the blood current was more slowly, and with greater difficulty re-established in the lower branches of the retinal vessels than in the upper, makes it more probable that the embolus really was lodged in the retinal artery, probably at the usual place, its point of bifurcation.

It seems reasonable to suppose that the pressure applied to the globe may in some way have assisted in dislodging the embolus; it is conceivable that the embolus may have been a long narrow one fixed behind the bifurcation of the artery, and that it may have been so tilted that its long axis came to correspond with that of the vessel; thus it may have been enabled to pass forward to some peripheral portion of the retina.

ROTHHOLZ, (Breslau). The etiology of posterior staphyloma of the sclera. (*Von Graefe's Archiv*, xxvii., 11, p. 25).

The author holds—in common with many high authorities—that the occurrence of *staphyloma posticum* cannot be fully explained without assuming a congenital peculiarity in the structure of the eye, which pre-disposes it to yield under a pressure which the normal eye would bear with impunity. He believes that this peculiarity, which has hitherto been a matter of hypothesis only, is to be found in the *funiculus scleroticae* of Hannover. In vertical sections of the sclera, immediately behind the macula lutea Hannover found, in a large number of human eyes, vestiges of the aperture, through which, in the fœtus, the vitreous body is connected by a stalk with the rest of the mesoderm. There exists here a fine fibrous strand, perforating the sclera in a direction vertical to its thickness, and interrupting the continuity of its fibres; the anterior extremity of this strand adheres to the choroid, the posterior end is spread out and loses itself in the tissue covering the outer surface of the sclera. The sclera, where perforated by this strand, is somewhat depressed on both surfaces, and is, therefore, thinner than in the surrounding region.

It has been demonstrated by Jaeger and others, that the thinnest part of a staphyloma posticum lies, as a rule, immediately behind the macula lutea, and that the attenuated portion is usually of a roundish form. From this Rothholz concludes that the *funiculus* is the starting-point of the attenuation. He believes that while prolonged efforts of

convergence and accomodation, with stooping of the head, are active causes of the disease, the pre-disposition to it depends upon some congenital abnormality in the form or in the resisting power of the funiculus. He gives diagrams illustrating the formation of the funiculus, as observed by himself in the eye of the pig-embryo.

It must be noted that the correspondence of the myopic staphyloma with the site of the foetal aperture in the sclera was pointed out by the earliest investigators of myopia (*vide* Donders, Accommodation and Refraction, p. 385); the question which is still open, is the nature of the *special* pre-disposition which induces myopia in certain eyes, while others subjected to like external conditions escape. Variations in the tissue closing the foetal aperture are, after all, entirely hypothetical. The recent researches of Emmert, (*vide* following abstract), afford some new and important suggestions on this matter.

ANGELUCCI, (Rome). Thrombosis of the Central Retinal Vein. (*Annali di Ottalmologia. Fasc. ii., 1880.*)

THE author believes with Professor Michel (*von Graefe's Archiv f. Ophth., xxiv., 2.*) that many of the cases which have hitherto been described as due to embolism of the central artery of the retina, or to apoplexy of the optic nerve, really depend upon a thrombosis of the central retinal vein. He briefly summarizes Prof. Michel's paper, and agrees with his conclusions. He reports four cases observed by himself, in three of which he was able, by microscopic examination after death, to ascertain the exact pathological conditions.

The first three cases reported are those of young subjects, aged respectively 21, 23, and 24. They were all in fair general health, but suffered from some acute affection of the vascular system, but showing no sign of arterial atheroma or sclerosis. The fourth was that of a patient aged 78, suffering from gangrene of the right foot.

From the carefully observed ophthalmoscopic symptoms and their comparison with the microscopic appearances after death, Dr. Angelucci believes himself warranted in offering the following as the indications for differential diagnosis :—

Thrombosis of Retinal Vein.

1. The vessels run a tortuous course.
2. The calibre of the arteries is normal, or but slightly diminished.
3. The veins are turgid, and appear interrupted here and there.
4. There is pulsation in the retinal veins.
5. Retinal hæmorrhages in greater or less abundance.

The author does not deny *in toto* the correctness of the statement of Magnus (*Die Sehnervenblutungen. Leipzig, 1874*) as to the probability of apoplexy of the optic nerve as an explanation of the loss of sight in certain cases, but he maintains that we have as yet no certain evidence to guide us in diagnosis.

Lloyd Owen.

Embolism of Central Artery.

1. The course of the vessels is normal.
2. The arteries are fili-form.
3. The veins are filiform in the central part of the retina, and increase in size towards the retina.
4. No pulsation in vein.
5. No retinal hæmorrhages

E. EMMERT, (Bern). The Eye and the Skull.
(Berlin: Hirschwald, 1880.)

These researches give fresh confirmation to the view, advocated long since by Donders, that the elongation of the myopic eyeball is mainly due to tension of the sclera brought about by traction of the internal recti during prolonged convergence. They also point to causes of resistance, hitherto unrecognized, which may, in certain cases, render convergence especially difficult and prejudicial.

By means of a working model, in which variations in the form of the eyes, in the distance between the eyes, and in the depth of the orbits, could be imitated, Emmert investigated the conditions of ocular movements with regard to the following points:—1. the length of the recti; 2. their contact with the globe; 3. their alteration in length during given excursions of the eye; 4. the force necessary to produce these excursions; 5. the length of the radius on which each muscle acts in different positions of the eye; 6. the varying

relations of the optic nerve trunk to the muscles surrounding it. He was able to shew by experiment that:—

a. the hypermetropic eye, by reason of its form, is rotated inwards more easily, the myopic less easily, than the emmetropic eye;

b. with a given distance between the eyes, and a given distance between the optic foramina, the difficulty of convergence increases as the depth of the orbit diminishes;

c. with a given depth of orbit, and a given distance between the optic foramina, the difficulty of convergence increases as the distance between the eyes increases;

d. during convergence the trunk of the optic nerve is pressed upon by the external rectus through the medium of the intervening fat, and other things being equal, this pressure increases as the distance between the eyes increases, and as the depth of the orbit diminishes.

Mannhardt's theory—namely that the predisposing cause of myopia is a too great distance between the eyes—is not accepted in an unqualified manner by Emmert, for among 217 children examined as to this point, he found that the average distance between the eyes was not materially greater in the myopes than in the emmetropes and hypermetropes, but he believes that this distance, though not *absolutely* too great, is too great *relatively to the depth of the orbits*; he urges that such a disproportion in the dimensions of the skull, transmitted through successive generations, is a far more probable explanation of the hereditary character of myopia, than a transmitted weakness of the sclera the existence of which no one has been able to demonstrate. He has not as yet found any opportunity of obtaining measurements of skulls in cases where errors of refraction had been noted during life. Such measurements made on a uniform principle (vide Emmert) are much wanted. Moreover, as regards the average distance between the eyes in the three types of refraction, other observers have obtained different results from that arrived at by Emmert; a full and accurate research on this point is therefore still needed.

Hasner has ascribed the crescentic choroidal atrophy

and the insufficiency of the internal recti which accompany the development of myopia, to an insufficient length of the optic nerves, whereby the latter resist the movements of convergence, but this theory is refuted by the fact that the insufficiency may be removed by tenotomy of the external recti.

Emmert points to the pressure exerted laterally upon the optic nerve by the external rectus through the medium of the intervening fat, as a more probable cause of resistance and mischief; he shows that this pressure is greatest just under those conditions which are prone to lead to myopia, and he asserts his belief that it is the active cause of the stretching of the sclera at the outer border of the disc, the myopic crescent, the obliquity of the disc in relation to the axis of the eye, the insufficiency of the internal recti, and the advantage obtainable by tenotomy of the external recti.

J. TWEEDY and S. RINGER, (London). On the mydriatic properties of Homatropia, or Oxytoluyltropein, with an account of its general physiological action. (*Lancet*, 1., 1880, p. 795.)

E. FUCHS, (Vienna). Homatropium Hydrobromatum (*Centralbl. f. prakt. Augenheilk.* 1880, p. 182.)

S. D. RISLEY, (Philadelphia). The value of Homatropine Hydrobromate in Ophthalmic practice. (*Amer. Journ. of Med. Sciences*, Jan., 1881, p. 113.)

H. SCHAEFER, (Giessen). Comparative investigations into the effects upon the eye of Atropine, Duboisine and Homatropine. (*Archives of Ophthalmology*, X., 11, 1881, p. 196.)

C. A. OLIVER, (Philadelphia). The comparative action of Hydrobromate of Homatropine and of Sulphate of Atropia upon the iris and ciliary muscle. (*Amer. Journ. of Med. Sciences*, July, 1881, p. 150.)

For the purposes of ophthalmic diagnosis, homatropine has a distinct practical advantage over atropine, and will undoubtedly supplant the latter, if it have not already done so. Very many investigations of its action have been made during the

last two years, and although the results are not precisely in accord at all points, the following summary may be taken as representing facts which are well ascertained.

Chemically, homatropine is closely related to atropine. Atropine has been split up into two constituents—*tropin*, and *tropic acid*; the different salts of tropin, when treated with dilute hydrochloric acid, yield a series of artificial alkaloids termed *tropeins*; the amygdalate of tropin, thus treated, yields the alkaloid known as homatropin. The hydrobromate is the form hitherto usually employed; it is soluble in 10 parts of water.

In its *constitutional effects* homatropine possesses some of the properties of atropine, but in a weaker degree; thus, in the frog, large doses cause paralysis and tetanus, and topically applied, slow the heart's action; in man, subcutaneously injected, it acts like atropine in checking the sweating caused by pilocarpine, but its action on the heart is unlike that of atropine, for while atropine accelerates and strengthens the beats, homatropine retards and weakens them. As used in ophthalmic practice it is less liable to produce constitutional disturbance than atropine or duboisine; slight dryness of the fauces has been noticed occasionally, but only after the use of solutions stronger than are practically necessary.

A solution of 2 grains in one ounce of water is usually of sufficient strength for practical purposes. One drop of this solution introduced into the conjunctival sac produces a wide dilatation of the pupil and a very nearly complete paralysis of the accommodation.

Dilatation of the pupil begins in about 10 minutes, and reaches its maximum in rather more than 30 minutes. *i.e.* about as rapidly as with atropine solution of the same strength, but less rapidly than with duboisine. In elderly people the action is slower than in the young. The dilatation of the pupil is less complete than that produced by atropine; full dilatation may, however, be produced by a stronger solution (Oliver). The dilatation remains at its maximum not more than 3 hours, and disappears entirely in 24 hours or less; while with atropine and duboisine it remains complete for 24 hours, and disappears only after 4 or 5 days. It is stated that the dilatation of the

pupil is followed by a contraction to below the original size, but in the observations recorded (Fuchs), atropine was applied simultaneously to the fellow eye, and this by increasing the admission of light to the one, would naturally, so soon as the effect of the homatropine had passed off, cause a consentaneous contraction of the pupil of the other.

Paralysis of the accommodation begins with the commencement of the dilatation of the pupil, *i.e.*, about 10 minutes after the instillation; it attains its maximum in from 30 to 60 minutes, remains practically unaltered for about 3 hours, and then rapidly subsides, disappearing entirely within 24 hours. Duboisine paralyses the accommodation rather more rapidly than homatropine; the paralysis persists in full intensity for 12 hours or more, and occupies from 2 to 4 days in passing off. Atropine on the other hand acts a little less rapidly on the ciliary muscle than homatropine, but maintains its action considerably longer even than duboisine. The paralysis produced by homatropine is not quite so complete as that produced by duboisine and atropine of the same strength. The two grain solution causes a paralysis which is not absolute, but which suffices, in every case probably, to render manifest the whole of any latent error of refraction. A stronger solution (10 grains to the ounce), appears to induce an absolute paralysis of accommodation in about 30 minutes, which passes off nearly as rapidly as that caused by the 2 grain solution.

The effect of homatropine is entirely and permanently neutralised by eserine in solution of the same strength; the effects of atropine and duboisine on the other hand re-assert themselves as the action of eserine subsides.

Homatropine in solution is not more liable to irritate the conjunctiva than atropine or duboisine.

The present price of the hydrobromate is one shilling and sixpence a grain.

There is no evidence at present as to the length of time over which a solution of homatropine retains its activity unimpaired. Employed in the form of the gelatine disc (Savory and Moore), in which it is absolutely permanent, the $\frac{1}{5,000}$ grain produces rapid dilatation of the pupil and nearly complete paralysis of the accommodation, entirely without irritation

From the foregoing it is evident that when a mydriatic is to be employed to dilate the pupil for ophthalmoscopic examination, or to paralyse the accommodation in order to estimate refraction, homatropine is to be preferred to atropine or duboisine. It produces the required changes rapidly and safely, and entails only a very short disuse of the eyes in near vision. When, on the other hand, a prolonged therapeutic effect is desired, atropine is indicated.

It has not yet been noted whether homatropine, like atropine, can induce glaucoma. The presumption is that its tendency in this direction is in proportion to its power as a dilator of the pupil.

M. KROEMER, (Basel). Antiseptic atropine- and eserine-solutions. (*Corr.—Blatt f. Schweiz. Aerzte*, XI., 1881.)

Kroemer believes that the conjunctival inflammation which occasionally follows the use of atropine drops, is of septic origin. Atropine-solutions which have stood for some weeks, contain a considerable amount of fungoid growth. It was found that the addition of salicylic acid did not hinder the formation of this growth, and that boracic acid did not prevent it altogether, but that carbolic acid in the proportion of 1 to 1,000 kept the solution perfectly clear, and caused on unpleasant sensation when it was applied to the conjunctiva. Eserine-solution was kept clear and almost free from change of colour for some months by the same means.

Since these carbolised solutions have been introduced, atropine-conjunctivitis, which was previously of frequent occurrence, has not been seen in the clinic at Basel.

The observation, if confirmed, is a very valuable one, but the septic theory will hardly explain the fact that in certain exceptional individuals one or two instillations of a freshly made atropine-solution will excite a sharp inflammation, and that the same thing will occur again when fresh atropine from another source is employed.

M. GAYET. (Lyon). Photographic iconography applied to ophthalmology. (*Lyon Medical*, Oct. 23, 1881, *vide also Annales d'Oculist.*, Sept.—Oct. 1881, p. 191.)

Under this title the author describes in detail the method by which he has succeeded, with the help of Drs. Hocquard and Masson, in photographing ophthalmic specimens—microscopic sections, and bisected globes. He proposes to continue the production of these photographs as fresh material shall present itself, and to place them in the hands of a publisher (la maison Molteni, rue du Chateau-d'Eau, Paris), who will execute prints from them for the use of other workers in ophthalmology. It is suggested that the collection may be augmented from other sources, and that a large catalogued series of pathological plates may be formed, from which each investigator may select those which bear upon his own particular subject.

The reprint of the article contains drawings showing the arrangement of the camera, illumination, &c., and a photograph of a bisected globe showing posterior synechia and total detachment of the retina.

RAVÀ. (Sassari.) A new test for simulated monocular amaurosis.* (*Annali di Ottalmologia Fasc. iv.* 1881.)

The author's method of testing is founded upon the power which green glass possesses of absorbing red rays. A red object seen through green glass of a certain hue appearing of a brown colour.

The apparatus for testing consists of a small wooden box, twelve centimetres long by fifteen broad, and six high. The top of the box is of polished glass. The inside of the bottom, front and two sides is coloured a dead black. The inside of the end is covered with paper of a brilliant red. In the front of

* The same principle was adopted by Snellen some years since for the same purpose. By Snellen's method transparent coloured test types (red and green) are viewed by the patient through spectacles which have one red and one green glass. By this means the acuity of vision of the supposed non-seeing eye is determined at the same time.

the box, that is in the side opposite to the one covered with red paper, are bored two holes, oval, with the long diameter of two and a half centimetres, horizontal. The centres of the two holes to be about six centimetres apart. These holes are to be closed by a piece of ordinary window glass, so affixed that between it and the wood there shall be room for a piece of brilliant green glass, half the length of the end of the box, to slide backwards and forwards. Thus, whichever way it may be made to slide, one hole shall always be covered by the green glass.

The use of the instrument is based upon the fact that a person looking with both eyes placed at the holes would see the red end of the box clearly and of its proper colour. The same thing would hold when looking through the hole covered by ordinary glass only ; whilst on looking through the hole covered by both kinds of glass the paper would appear of a dirty brown.

Supposing, then, that a person complains of having lost the sight of the left eye. The green glass is placed opposite to the opening for the *right* eye, and he is directed to look at once with both eyes through the two holes. If he says he sees the red colour clearly it is certain he has sight in the *left* eye, for if he saw with the right eye only he would see the brown colour instead of the brilliant red.

It is necessary to watch the person narrowly when he is put to look through the holes, so that he shall not close either eye undetected. The only source of mistake, in case of an honest person, is the possible presence of colour-blindness.

Lloyd Owen.

OPHTHALMOLOGICAL SOCIETY OF GREAT BRITAIN.—

THURSDAY, DECEMBER 8th, 1881.

WILLIAM BOWMAN, Esq., F.R.S., President, in the Chair.

General Retinal Peri-Arteritis.—Dr. Mules (Manchester) presented a man aged 59, the subject of chronic albuminuria and valvular disease of the heart, in whom the retinal arteries in one eye were transformed into brilliant white cylinders, which could be traced to the third divisions ; the natural red colour of the vessels could only be seen in a few places ;

hæmorrhages were also present. Vision was reduced to perception of light in the affected eye; in the sound eye it was normal.

Dr. Brailey thought the retinal changes were similar to those commonly present in chronic albuminuria, but extremely pronounced.

Dr. Gowers thought that peri-arteritis such as this, confined to definite areas, must be distinguished from the arterial changes usually met with. He had figured a somewhat similar example in his *Medical Ophthalmoscopy*.

Tumour at the Sclero-Corneal Junction.—Mr. Mason (Bath) showed the patient, a woman aged 30. The tumour had been slowly growing for about two years and a half, and since her confinement four months ago, it had become more vascular, and had notably increased in size.

The President thought the tumour a very unusual one; he thought it lay altogether in front of the cornea, and immediately beneath the conjunctiva; it was very little vascular. He would be inclined to shave it off. In a similar case he had seen a recurrence checked by incising the cornea around the growth.

A Case of Acute Glaucoma cured by Eserine.—Mr. Nettleship read the notes of this case, which had been under the care of Mr. R. J. Pye-Smith (Sheffield). The patient, a lady aged 70, had been severely shaken by a fall. On the fifth day after the accident, the left eye became acutely glaucomatous; T + 2, cornea steamy, pupil dilated, vision reduced to counting fingers, and coloured rings around a candle. Eserine discs entirely relieved the symptoms within twelve hours. For a year after this, slight and transient relapses occurred at intervals of not more than a month. The symptoms, when they recurred, were always removed by the use of the eserine discs. Latterly, the relapses had become less and less frequent, and none had occurred for the last three months. The eye at the present time (two years after the first attack) is normal.

A Case of Acute Glaucoma cured by Sulphate of Eserine.—Dr. Buzzard had been called to a lady aged 64, suffering from severe neuralgia of the supraorbital nerves, which had been treated by gelseminum. He found the typical symptoms of acute glaucoma. Iridectomy was advised; but, before resort-

ing to operation, eserine discs were tried, on the advice of Mr. Lawson. Immediate improvement was noticed, and, in six weeks, the patient had completely recovered ; she still remains free from disease.

The President observed that in the former case there was a suspicion that the glaucoma was due to the injury ; in the latter there was no history of injury, and, therefore, the case afforded satisfactory evidence that acute glaucoma could be cured by eserine.

Dr. Fitzgerald (of Dublin) had seen one case of acute glaucoma immediately relieved by eserine. In chronic glaucoma, also, eserine had sometimes yielded satisfactory results in his hands.

Dr. Brailey would expect benefit from eserine only in acute cases. The contraction of the ciliary muscle and stretching of the iris caused by the eserine, opened widely the spaces of Fontana, and thus encouraged the escape of the hypersecretion of fluid on which the symptoms depended. In chronic glaucoma, the angle of the anterior chamber being closed, no such effect could follow.

Mr. W. A. Critchett had found eserine more useful in acute than in chronic glaucoma.

Dr. Andrew (Shrewsbury) had found eserine of value, when sympathetic ophthalmia was commencing ; it seemed to reduce the tension of the eye sympathetically affected, and gave time for the selection of a favourable moment for excision of the diseased eye.

Mr. Priestley Smith had obtained what appeared to be permanent relief, by eserine, in two cases of acute glaucoma. He believed that eserine reduces glaucomatous tension not by any influence over secretion, but by drawing the iris away from the angle of the anterior chamber, and thus mechanically relieving the obstructed outlet. In the healthy eye neither atropine nor eserine produce any discoverable change of tension. In glaucoma they produce their peculiar effects only when they can act mechanically upon the position of the iris at the angle of the anterior chamber, while in certain forms of glaucoma in which the relations of the iris are different, *e. g.* serous iritis and dislocation of the lens into the anterior chamber, their

effects upon the tension are entirely absent, or even reversed.

Mr. McHardy pointed out that it was unsafe for patients, on the strength of a temporary benefit from eserine, to pass beyond the reach of surgical superintendence. In two cases he had known patients led by their faith in eserine, to put off the operation of iridectomy until too late.

Mr. G. Critchett observed that though eserine gave temporary relief, the glaucomatous condition generally returned. He believed that a patient who had had an iridectomy done, was in a safer condition than one who placed his confidence for the future in a resort to eserine.

Sequel to a Case of Cerebral Tumour.—Dr. Gowers described the further development of symptoms in a case shown at the first meeting in 1880; the neuritis had slowly subsided into atrophy, with progressive deterioration of vision. During the last eight months, however, there had been, as often occurs in consecutive atrophy, a degree of gradual improvement in this respect; the field of vision was now in one eye much restricted, and to a different extent for various colours. For red, it was limited, and contained two scotomata; for green, divided into two unequal portions, the larger containing a scotoma. He believed that an irregular alteration of the fields of this character, was pathognomonic of consecutive atrophy.

Two Cases of Optic Neuritis in Chorea.—Dr. Gowers observed that only one other case of this combination had been recorded. His first patient was a boy, aged 11, a member of a family in which, later in life, several cases of simple atrophy of the optic nerves had occurred. The chorea was very slight, muscular weakness predominating over the choreiform movements. Distinct double optic neuritis was discovered; the vessels were normal, and sight was unaffected. The patient gradually recovered from the chorea and remained well. The second patient was a young woman, aged 20; a well-marked attack of chorea followed about three months after rheumatic fever. Double optic neuritis was found, the vessels were unchanged, and no hæmorrhage; there was no albuminuria. These were the only two cases of optic neuritis in chorea, which he had met with in twelve years, during which he had carefully examined a great number of cases; he hesitated to regard the

neuritis as in any way the result of the chorea ; probably the morbid states of the brain and eye were merely associated, and perhaps owned some common cause.

Dr. Stephen Mackenzie had examined a large number of cases of chorea, without once meeting with optic neuritis.

Dr. Buzzard also had never seen optic neuritis in chorea. He had lately under his care in hospital, a young woman with chorea, who developed maniacal symptoms, which terminated favourably with a crop of herpes about the mouth and tongue. From what he had observed in other cases, he attributed the herpes to basal meningitis, from which there had been irritation of the fifth nerve within the cranium. A case of chorea which had produced similar mental disturbance, was now under the care of his colleague, Dr. Radcliffe. That had likewise developed facial herpes. He suggested the possibility of the occasional occurrence of meningitis in chorea, explaining the association of optic neuritis. His patient's mental state had precluded the possibility of ophthalmoscopic examination.

Dr. Gowers said that, in the boy, the affection was too slight to lend any support to the idea of a coexistent meningitis ; there was no endocarditis. In his second case, there was some endocarditis, but no evidence of any meningitic affection.

Axial Neuritis in Spinal Disease.—Dr. Gowers observed that a central scotoma, indicative of axial neuritis, according to the conclusions of Förster, verified by Samelsohn and Nettleship, was an exceedingly rare alteration of sight in spinal atrophy. He related a case in which this association occurred. The patient, a man aged 40, presented the symptoms of combined lateral and posterior sclerosis. The periphery of each visual field was normal, but in each there was a transversely oval central scotoma ; the loss for red and green was rather greater than for white. Both optic discs were grey and hazy. The patient was a moderate smoker. Dr. Gowers was inclined to regard the condition as a combination of spinal atrophy with tobacco amblyopia, the latter occurring from an unusually slight consumption of the weed, because the nerves were the seat of an independent morbid process.

The President thought it desirable to ascertain whether persons, who made moderate use of tobacco, were more liable

than others, when attacked by spinal disease, to this form of amblyopia.

Unilateral Hemiopia in Spinal Atrophy.—Dr. Gowers related a case of this rare condition.

On Unilateral Exophthalmos, and the Value of the Sign described by Von Graefe as characteristic of Graves's Disease.—Dr. C. E. Fitzgerald (Dublin) raised the question of the value of the sign, insisted upon by Von Graefe as characteristic of Graves's disease—namely, the loss of consensus between the movements of lid and globe, when the latter is directed downwards. This sign, according to Suttler, is quite independent of the exophthalmos, and may even precede it. Dr. Fitzgerald reported four cases of unilateral exophthalmos. In all there was strong reason to believe that the cases were really instances of Graves's disease, in an early and imperfectly developed form. In each case, one of the earliest symptoms had been this peculiar condition of the upper lid, which did not follow the movement of the globe in looking down.

The President believed that it was common to find some inequality in the amount of the exophthalmos; he had seen a few cases in which it was quite unilateral; the exposure of the sclerotic, caused by the defective downward movement of the upper lid, was most characteristic of Graves's disease, and was not seen in protrusion of the eyeball from mechanical causes.

Specimens shown by Card.

Mr. Power: Enlargement of the lachrymal gland.

Mr. Cowell: Retinitis pigmentosa, with unusually little pigment.

Mr. Nettleship: 1. Double retinitis, of old date, in a patient with diabetes; recent embolism of retinal artery in one eye. 2. Serous cystic tumour of eyebrow, recurring after puncture, free excision, and injection with iodine.

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RECENT LITERATURE.

A. RETINA. OPTIC NERVE. CENTRES.

A Centre for colour vision.

Lancet, Nov. 26, 1881, p. 918.

ALEXANDER. Casuistische Mittheilungen aus der Augenheilanstalt zu Aachen. 1) Neuritis des Sehnerventammes. 2) Ischaemia retinae. Heilung durch Amylnitrit. 3) Retinitis proliferans. 4) Ueber die Behandlung der Netzhautablösung mit Skleralpunction. 5) Keratitis bullosa. 6) Einseitige Pupillen- und Accommodationslähmung auf syphilitischer Basis.

Deutsche med. Wochenschr. Nr. 40 u. 41.

ALLBUTT, C. A case of idiopathic anæmia with retinal hæmorrhages.

British Medical Journal, Oct. 15, 1881, p. 627.

BUTZ, R. Vorläufige Mittheilungen über Untersuchungen der physiologischen Functionen der Peripherie der Netzhaut.

Arch. f. Anat. u. Physiol. p. 437—445.

DENISSENKO, G. Ueber das Verhalten der äusseren Körnerschicht der Netzhaut bei gewissen Krankheiten.

Virchow's Arch. Bd. LXXXIII. Heft 3. 1881.

DE VINCENTIIS. Sul Glioma della Retina.

Ann. di. ottalmol. Anno X. 342.

HIGGINS, C. Three cases of simple atrophy of the optic nerves, occurring in members of the same family.

Lancet, November 19, 1881, p. 869.

HUNTER, G. Embolism of central artery of retina.

Glasgow Medical Journal, Oct. 1881, p. 293.

HUTCHINSON, J. On retinitis hæmorrhagica, more especially in its relations with gout.

Medical Times and Gazette, Dec. 10, 1881, p. 675.

LANDESBURG, M. Zur Neurotomia optico-ciliaris.

Klin. Mon.-Bl. f. Augenh. XIX. p. 371.

NIEDEN. Beiträge zur Lehre vom Zusammenhange von Hirn- und Augenaffectionen.

Arch. f. Augenh. X. p. 603.

- PARINAUD. L'héméralopie et les fonctions du pourpre visuel.
Compt. rend. de l' Acad. d. sc., Paris, 1881, *XCIII*,
p. 286.
- UNTERHARNSCHEIDT. Die Entstehung der Netzhautablösung
bei Myopie.
Berl. klin. Wochenschr. Nr. 40.
- WADSWORTH, O. F. The Fovea centralis in man.
Beiträge zur Ophthalmologie, als Festgabe Prof. Dr.
Fr. Horner gewidmet, p. 199.
- WÄELCHLI, G. Mikrospektroskopische Untersuchungen der
gefärbten Kugeln in der Retina von Vögeln.
v. Gräfe's Arch. f. Ophth. XXVII. 2 p. 303.
- WILBRAND, H. Ueber Hemianopsie und ihre Verhältnisse
zur topischen Diagnose der Gehirnkrankheiten. Berlin
1881. Aug. Hirschwald. 214 Seiten. 8°.

B. UVEAL TRACT. VITREOUS AND AQUEOUS. LENS.

- AYRES, W. C. Contributions to the knowledge of new
formations in the eye.
Arch. of Ophth. Sept. 1881, p. 269.
- AYRES, W. C. Contributions to the pathology of sympa-
thetic inflammation.
Arch. of Ophth. Sept. 1881, p. 277.
- BEYER. Arteria hyaloidea persistens. Canalis Cloqueti und
Spaltbildung am Sehnerveneintritt.
Prager med. Wochenschr. Nr. 34. u. 35.
- CHISOLM, J. J. Sympathetic ophthalmia. Two cases under
peculiar circumstances. Sequel of surgical operations.
Arch. of Ophth. Sept. 1881, p. 265.
- DEUTSCHMANN, R. Zur physiologischen Chemie der Augen-
flüssigkeiten.
v. Gräfe's Arch. f. Ophth. XXVII. 2 p. 295—300
- DUFOUR, M. Sur l'action de l'iridectomie dans l'hydroph-
thalmus congenitus.
Beiträge zur Ophthalmologie, als Festgabe Prof. Dr. Fr.
Horner gewidmet p. 109.
- HIRSCHBERG. Ueber Colobom und Mikrophthalmus.
Centralbl. f. prakt. Augenh. Sept. 1881.
- KNAPP, H. Report of a seventh hundred of cataract extrac-
tions. With historical and critical remarks, particularly
on the peripheral opening of the capsule.
Arch. of Ophth. Sept. 1881, p. 295.

- KNIES, M. Ueber sympathische Augenerkrankung.
Beiträge zur Ophthalmologie, als Festgabe Prof. Dr. Fr. Horner gewidmet, p. 53.
- KRAUSE, F. Beiträge zur Pathologie der sympathischen Augenentzündung.
Arch. f. Augenh. X. p. 629.
- LEESER, J. Die Pubillarbewegung in physiologischer und pathologischer Beziehung. Mit einem Vorworte von Prof. Alfred Gräfe. Wiesbaden. J. F. Bergmann.
- MANDELSTAMM, L. Fall von Sarkom der Chorioidea.
Petersburger med. Wochenschr. VI. 17.
- MASSE, E. Des tumeurs perlées de l'iris.
Recueil d'ophth., 1881, III. p. 394.
- MAUTHNER, L. Glaucom. Wiesbaden, 1881, J. F. Bergmann.
- MICHEL, J. Ueber Iris und Iritis. Hierzu Taf. IV.—XI.
v. Gräfe's Arch. f. Ophth. XXVII, 2. p. 171.
- RHEINDORF. Ueber Glaskörperhexis bei Starrexttraction.
 Leipzig und Heidelberg. C. F. Winter.
- WIDDER, J. Ueber Iritis syphilitica mit Rücksicht auf ihr Verhalten zur allgemeinen luetischen Diathese.
v. Gräfe's Arch. f. Ophth. XXVII. 2. p. 99.

C. CORNEA. CONJUNCTIVA. SCLERA.

- BARNES, F. Ophthalmia neonatorum.
British Medical Journal, Nov. 5, 1881, p. 740.
- BONAGENTE, R. Contribuito allo studio delle congiuntiviti.
Giorn. internaz. delle sc. med. III, p. 47.
- CRITCHETT, A. A Case of complete symblepharon successfully treated by operation.
British Medical Journal, Dec. 10, 1881, p. 934.
- CUIGNET. De la conjonctivite chronique simple.
Recueil d'ophth. 1881, iii, p. 385.
- FRIDENBERG. Penetrating wound of sclera; suture; recovery with nearly perfect vision.
New York Medical Record, Nov. 1881, p. 550.
- GALEZOWSKI. Du traitement de la kératite interstitielle et de la skléro-kératite par l'iridectomie.
Recueil d'ophth. 1881. iii. p. 408.
- GROSSMANN, K. On ophthalmia neonatorum, and its prevention.
British Medical Journal, Oct. 29, 1881, p. 702.

HAENSELL, P. Experimentelle Untersuchungen über das Verhalten der Hornhautgrundsubstanz bei traumatischer Keratitis.

v. Gräfe's Arch. f. Ophth. XXVII., 2 p. 55.

NICHOLSON, B. A note on some peculiarities of contagious ophthalmia, and on the use of bicarbonate of soda.

Medical Times and Gazette, Oct. 29, 1881, p. 516.

NODIER, C. Sur une ophthalmie causée par la lumière électrique.

Paris, 1881. 41 p. 4°.

RAMPOLDI. Della cheratite dei mietitori e dei suoi rapporti colla dacriocistite.

Ann. di ottalm., Anno X. p. 304.

ROOSA, D. B. St. J. Foreign bodies on the conjunctiva or cornea.

New York Medical Record, Oct. 1881, p. 421.

SCHIESS-GEMUSEUS. Langwierige Bläschenbildung auf der Hornhaut nach Entzündung des anderen Auges.

Klin. Mon.-Bl. f. Augenh. XIX. p. 386.

SCHOEN, W. Der Aplanatismus der Hornhaut.

Beiträge zur Ophthalmologie, als Festgabe Prof. Dr. Fr. Horner gewidmet, p. 125.

WOLFE, J. R. On conjunctival transplantation from the rabbit.

Medical Times and Gazette, Nov. 1881, p. 608

D. REFRACTION. ACCOMMODATION. MOTOR APPARATUS.

ADAMS, J. E. A new frame for holding spherical and cylindrical lenses during the determination and correction of errors of refraction.

Lancet, Nov. 19th, 1881. p. 894.

ANDERSON, T. A prismatic optometer.

Specialist, Nov. 1881. p.

AYRES, W. C. Notes on the focal lines in astigmatism.

N. Y. Medical Journal. Nov. 1811. p. 476,

BROWNING, W. Binocular ophthalmotrope.

Arch. of Ophth. Sept. 1881. p. 249.

FROST, W. A. On the chief methods at present in use for estimating astigmatism.

Specialist, Dec. 1881. p. 57.

GRUENING, E. Traumatic ophthalmoplegia.

New York Medical Record. Nov. 1881. p. 553.

- HUNJUS, H. Zur Symptomatologie der Brückenerkrankungen und über die conjugirte Deviation der Augen bei Hirnkrankheiten. Bonn 1881. Cohen & Sohn.
- LANDESBURG, M. Ueber das Auftreten von regelmässigem Astigmatismus bei gewissen Refractive- und Accommodationsanomalien.
v. Gräfe's Arch. f. Ophth. XXVII. 2. p. 89.
- LEICHTENSTERN, O. Ueber die conjugirte seitliche Deviation der Augen bei Hirnkrankheiten.
Deutsche med. Wochenschr. Nr. 44.
- LITTON, L. On a new form of schematic eye.
Arch. of Ophth. Sept. 1881. p. 256.
- MOTAIS, E. Du Traitement du Strabisme. Paris, 1881. Baillière & fils.
- OUGHTON, T. The phenomena of double vision and double touch.
Lancet, Oct. 22nd, 1881. p. 702.
- ROTHHOLZ. Zur Aetiologie des Staphyloma posticum sclerae.
v. Gräfe's Arch. f. Ophth. XVII. 2. p. 25.
- SCHIESS-GEMUSEUS. Traumatische Myopie, langsame spontane Restitution.
Klin. Mon.-Bl. f. Augenh. XIX. p. 384.

E. EYELIDS. LACHRYMAL APPARATUS. ORBIT.

- ADLER, H. Ueber die Entzündung des orbitalen Zellgewebes.
Wiener med. Presse. XXII. 25 p. 799.
- BAUDRY. Notes sur un cas d'emphysème des paupières et de l'orbite.
Recueil d'ophth. 1881. III. p. 449.
- BULL, C. S. The treatment of scars of the face, involving the eyelids directly or indirectly.
Amer. Journal of Medical Science, Oct. 1881. p. 431.
- BULL, C. S. Lesions of the orbital walls and contents due to syphilis.
New York Medical Record, Nov. 1881. p. 554.
- GOLDZIEHER, W. Die Schussverletzungen der Orbita und die nach denselben auftretenden Sehstörungen.
Wiener med. Wochenschr. Nr. 16 u. 17.
- OTT, T. Inflammation de la glande lachrymale (dacryo-adenite) terminée par suppuration.
Recueil d'ophth. 1881, III, p. 492.
- SCHREIBER, P. Zur Thränensackexstirpation.
v. Gräfe's Arch. f. Ophth. XXVII. 2. p. 283.

- SQUARE, W. On entropium.
British Medical Journal, Nov. 26, 1881. *p.* 854.
- STORY, J. B. Case of palpebral sarcoma.
Dub. Journal of Medical Science, Nov. 1881. *p.* 455.
- WOLFF, J. R. On a case of aneurism of the orbit cured by
 ligature of the common carotid artery.
Lancet, Dec. 3, 1881. *p.* 945.

F. MISCELLANEOUS.

- A new Eye, Ear, and Throat Hospital, for Shropshire.
Medical Times and Gazette, Oct. 1, 1881, *p.* 428.
- CONNOR, L. The use of hot water in the local treatment
 of diseases of the eye.
Amer. Journal Medical Science, Oct. 1881, *p.* 466.
- CONTURIER, G. Des sensations colorées. Paris, 1881: 64 *p.* 4°.
- DUJARDIN, A. Trois cas de blessures de l'oeil par les
 plumes d'acier.
Journ. des sc. méd. de Lille, 1881, *III*, 478.
- DUYSE, VAN. Note sur la prothèse oculaire.
Ann. de la société de méd. de Gand.
- ESCANDE, P. Considérations sur la scrofule dans ses rapports
 avec les maladies et les opérations de l'oeil.
 Paris 1881, 42 *p.* 4°.
- FORSTER, VON. Ueber Albinismus.
Klin. Mon.-Bl. f. Augenh. *XIX.* *p.* 389.
- Glasgow Ophthalmic Institution.
Lancet, Nov. 12, 1881, *p.* 837.
- HAAB, O. Anatomische Untersuchung eines siebenundzwanzigjährigen Anophthalmus.
 Der Micrococcus der Blennorrhoea neonatorum.
Beiträge zur Ophth., Festgabe an Prof. Horner, *p.* 131.
 and 159.
- HIRSCHBERG & KRAUSE Zur Pathologie der ansteckenden
 Augenkrankheiten.
Centralbl. f. prakt. Augenh. *Sept.* 1881.
- HOPPE, J. Psychologisch-physiologische Optik in experimentell psycho-physischer Darstellung. Leipzig 1881.
 Otto Wignand.
- KEYSER, P. D. Ophthalmological anomalies.
Arch. of Ophth. *Sept.* 1881, *p.* 261.
- KROEMER, M. Ueber die Anwendung antiseptischer Atropin-
 und Eserinlösungen.
Corr.-Bl. f. Schweiz. Aerzte. *Jahrg.* *XI.*

- LEYDIG. Die augenähnlichen Organe der Fische. Bonn 1881.
- MAGNUS, H. Farben und Schöpfung. Acht Vorlesungen über die Beziehungen der Farben zum Menschen und zur Natur. Breslau 1881. J. U. Kern's Verlag. With 1 plate.
- MAUTHNER, L. Ueber farbige Schatten, Farbenproben und erworbene Erythrochloropie.
Wiener med. Wochenschr. Nr. 38 u. 39.
- MICHEL, J. Das Verhalten des Auges bei Störungen im Circulationsgebiete der Carotis.
Beiträge zur Ophth., Festgabe an Prof. Fr. Horner p. 1.
- MOOREN. Gesichtsstörungen und Uterinleiden.
Arch. f. Augenh. X. p. 519.
- NICOLINI. Di una enervazione ottico-ciliare.
Ann. di ottalmol. Anno X. p. 329.
- NIEDEN. Ein neuer Fall von pulsirendem Exophthalmus beider Augen.
Arch. f. Augenh. X. p. 641.
- SEDAN. Emploi de l'homatropine en oculistique.
Gazette hebdomadaire de médecine. 1881, XVIII. 494
- SNELL, S. Antiseptic silk in ophthalmic and aural cases.
Lancet, Oct. 15, 1881, p. 671.
- Special fees for ophthalmic certificates. Meeting at Dublin, Oct. 28, 1881.
British Medical Journal. Nov. 5, 1881, p. 756.
- STEFFAN, PH. Beitrag zur Pathologie des Farbensinnes.
v. Gräfe's Arch. f. Ophth. XXVII. 2. p. 1.
- The Birmingham Eye Hospital.
Lancet, Nov 19, 1881, p. 891.
- Transactions of the Ophthalmological Society of Great Britain. Vol. I, 1881. London, J. E. Adlard.
- WOLFE, J. R. Diseases and Injuries of the Eye. London, Churchill, 8vo.
- WORDSWORTH, J. C. Congenital absence of eye-balls.
Lancet, Nov. 19, 1881, p. 875.



PRACTICAL REMARKS ON CATARACT,

BY

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(Continued from page 26.)

In my last I entered upon some questions involved in the early stages of cataract, and I now propose to continue the same train of observations.

When cataracts have reached a certain stage, more or less advanced, and the patient is aware of their existence, considerable anxiety is often manifested by the patient and the friends to obtain an opinion as to the probable progress of the malady, and the time that will elapse before the disease is so far advanced as to call for operative interference. It is very difficult to lay down any rules that will guide us with any degree of certainty upon this point. Those who have an opportunity of observing the lens during the formation of cataract must be impressed with the almost infinite variety, both in the form and in the distribution of the opacity, such variety, in fact, as almost baffles description; in truth, if we set to work to imagine every conceivable form in which the lens can lose its transparency, we should find our imagination outstripped by facts. Thus we find the opacity assuming the form of lines more or less fine, of flakes, of flocculi, of minute dots, and, in some rare cases, the lens increases considerably in density, and has a brownish red colour, giving to a superficial observer all the appearance of a dense amber cataract, and yet being so trans-

parent as to allow the transmission of light through it ; the effect of this condition of the lens is a high degree of myopia, only partially improved by glasses. Having reached this point, it remains stationary.

Then again the distribution of the opacity is subject to great variety. It may commence at the extreme margin of the lens, and gradually extend towards the centre, invading chiefly the cortical portion ; or it may commence in the more dense nuclear part, and gradually spread towards the margin ; or beginning simultaneously at the centre and the margin, the two may by degrees approach each other until they combine, and constitute a complete cataract ; or the opacity may be irregularly and capriciously distributed in lines, and flakes, or flocculi, throughout the lens substance.

Then again the density varies from the calcarious to the fluid, with every intermediate state. As a rule, perhaps, the age of the patient is the measure of the hardness of the cataract, but there are notable exceptions.

In the midst of all this variety, it becomes an interesting question how far we can determine the period that is likely to elapse between the commencement of a cataract and its complete development. It is a question which is often pressed upon us, and to which we are expected to give some sort of answer. Considering the enormous range between a slowly forming and a rapidly forming cataract, the one occupying several years, and the other only a few months, or even weeks, it is not very easy to reply to this question. One caution I would venture to give. The probability is always in favour of a long period before an incipient cataract reaches maturity. I am constantly meeting with cases in which the patient, after having been assured that blindness may be expected in the course of a year or two, has continued to enjoy useful vision for several years, and has spoken in disparaging terms of the oculist who had given a gloomy, a rash, and a false prophecy. It

is better to lean rather to the other side, and give an encouraging prospect of a long inter-regnum of useful sight.

The form and distribution of the opacity are of some assistance in forming an opinion on this point, likewise the age of the patient. Thus, if the opacity commence at the periphery of the lens, if it consist of fine lines extending towards the centre, and if it occur in a subject rather past middle life, the progress is usually very slow ; extending over several years, and often seeming to be almost, if not quite, stationary. If the opacity is in flakes, it will usually form more rapidly, and this will be still more marked, if the opacity spread simultaneously from the margin and the centre. In the young and the old the progress is usually more rapid than at the middle period of life.

Occasionally, when the opacity has reached a certain point, a rather sudden ripening of the cataract will occur. I have observed this to be associated with some constitutional derangement, such as a bad attack of influenza or some slight febrile disturbance. I have also noticed that the portion of the lens which becomes thus suddenly opaque is comparatively soft.

However slow the progress of lenticular opacity may be, if the patient's life be sufficiently prolonged, a period is reached when sight becomes so seriously impaired as to cause considerable inconvenience. We are now in a position to combine with the announcement to the patient of the presence of cataract, the assurance that there exists a very strong probability that sight can be restored. So that a statement, which, at an early stage, while the sight is still useful, would occasion great, and as I venture to think, unnecessary pain, is hailed as a blessing at a later period, when useful vision is all but, or entirely, gone. At this stage it often becomes a nice point to determine the exact period when the operation should be performed. It is difficult to lay down any hard and fast rule ; since

we must be guided to a certain extent by the social position and requirements of the patient, the rule I usually formulate for my own guidance is as follows—When the cataract is complete in one eye and is so far advanced in the other as to interfere with useful sight, causing great inconvenience and impeding or preventing the pursuit of the patient's ordinary avocations, the time has arrived for performing the operation upon the eye in which the cataract is fully formed.

I have found that any important departure from this rule is likely to be attended with inconvenience and disappointment, both to the oculist and to the patient. If on the one hand we are tempted, either at the request of the patient or influenced by undue anxiety to commence the operative treatment of the case, to remove the cataract whilst there is still some useful sight in the other eye, the patient is confused by the want of coaptation between the two eyes, and prefers to close one when using the other. Moreover, the operated eye is placed at an unfair disadvantage ; it has to compete with an educated eye with its lens still performing its functions. It is disappointing to be told, after a successful operation has been performed, that the patient still prefers the unoperated eye, and does not recognise that any benefit has been conferred, but, on the contrary, is rather embarrassed when employing the two eyes together.

The only consideration that might induce us to depart from the rule would be when a cataract was found to be in a very advanced stage in one eye ; and when having reached maturity it shewed signs of degenerative changes, and seemed to be exerting an unfavourable influence upon the deep structures of the eye. If this be allowed to go on the removal of the cataract is found to be more difficult and dangerous, and the vision subsequently obtained less perfect. It is better under such circumstances not to wait, but to remove the cataract as soon as it

shows signs of these degenerative changes, even though the sight of the other eye may still be useful.

Another question that we are not unfrequently called upon to decide is how far it is desirable to operate upon a cataract when it exists in one eye only and when there is no trace of a similar change in the other. In determining this point we must be guided to a great extent by the age and circumstances of the patient. In children and even in young adults I think it is generally admitted by the best authorities, that so many advantages are gained, and that the risks are so slight, that we are justified in recommending an operation. If it prove successful we have removed a deformity and obtained a certain degree of indistinct vision; but in a certain number of these cases, as I have already stated, the imperfect vision of the operated eye confuses the other. In the young however this inconvenience usually passes off. On the other hand the operation, especially in young adults, is not altogether devoid of risk, it may fail and become a source of irritation, and then hangs over us the dreadful though remote possibility of sympathetic inflammation of the other eye, which the removal of the eye operated on may fail to arrest. Under all these considerations, whilst on the one hand we ought not to refuse to operate in these cases, we are scarcely justified in urging the operation, and we ought not to withhold from the patient or from the friends, the possible danger. One such catastrophe may cast a shadow over a long and successful professional career. It is only during the early period of life that the question arises; after middle life every argument is in favor of refusing to operate so long as the second eye remains free from cataract and possesses normal vision.

I have now concluded my remarks upon the various questions that arise prior to undertaking the operative treatment of cataract—questions that force themselves upon our notice, and call for reflection on our part. It

is not probable that any perfect agreement will be obtained, but I hope that the ventilation of the subject may not be altogether wanting in useful results. The questions involved in the operative treatment of cataract are of yet greater practical value, and are far, at present, from obtaining any uniformity of opinion.

[*To be continued.*]

THE ACTION OF ATROPINE AND ESERINE IN GLAUCOMA.

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It is established beyond all question that atropine is apt to aggravate, and may even induce, glaucoma, and that eserine will frequently relieve and sometimes entirely subdue it. The latter fact, discovered by Laqueur and Adolph Weber, is now generally recognised as one of great practical value. But there are glaucomatous conditions which are not influenced by these drugs, and there are others which are influenced by them in precisely the opposite way—conditions of increased tension which are relieved by atropine, aggravated by eserine. The object of this paper is to point out, as far as may be, on the evidence of pathological and clinical observation, what are the particular changes which atropine and eserine are competent to effect in the glaucomatous eye, and what are the indications for their employment and avoidance.

It is important to notice that these drugs cause no marked changes of tension in the healthy eye. It is true that eserine increases the flow of the blood to the iris, and probably to the ciliary processes, and that atropine diminishes it in a very marked degree, and there is reason to believe that these vascular changes are accompanied

by a corresponding increase and diminution respectively in the interchange of fluids within the eye*, but it is quite certain that any variations in the intraocular pressure which may result therefrom are usually so slight as to be almost indiscoverable. The very pronounced changes of tension which atropine and eserine cause in glaucoma must, therefore, be connected with some abnormality in the glaucomatous eye. This abnormality lies, I believe, in the mechanical relations of the iris. I think it can be shown that whenever a myotic or a mydriatic raises or lowers the tension of the eye in any very marked degree, it does so by altering the position of the iris in such a manner as to hinder or to promote the escape of the intraocular fluid.

Primary Glaucoma.

During dilation of the pupil the tissue of the iris is gathered together towards the angle of the chamber, and thrown into wavy folds, which very considerably increase the thickness of the membrane; during contraction of the pupil the membrane is drawn away from the angle of the chamber, stretched out, and attenuated. When the angle of the chamber is of normal dimensions (*vide* Fig. 1) these slight changes do not endanger its patency, but when it is already narrowed or compressed they assume an entirely different importance.

Clinical observation shows that atropine is potent for mischief chiefly in the primary form of glaucoma, and chiefly in its earlier stages. Pathological anatomy affords a very satisfactory explanation of this fact. In the earlier stages of primary glaucoma the periphery of the iris is pressed upon behind by the ciliary processes, and is in contact, or very nearly in contact, in front with the cornea; under these conditions any thickening of this portion of the iris is manifestly apt to cause a sudden

* Ulrich.—Ueber die Ernährung des Auges (*von Graefe's Archiv*, xxvi., iii., p. 35.)

blockade of the angle of the chamber, and consequently a sudden aggravation of the glaucomatous state. Fig. 2 shows accurately the relations of these parts in a specimen of very acute and violent primary glaucoma.



Fig. 1.

FROM A HEALTHY EYE, AT AGE 65 (MAGNIFIED 15 DIAMETERS).



Fig. 2.

FROM A SPECIMEN OF RECENT ACUTE GLAUCOMA
(MAGNIFIED 15 DIAMETERS).

The patient was a lady, aged 75, in feeble health; the affected eye was nearly blind from senile cataract before the outbreak of the glaucoma. The glaucomatous attack occurred on the first anniversary of the death of the patient's only Sister. Perception of light was lost on the 2nd day. When called to the case on the 8th day, I found $T + 3$; $V = 0$; anterior chamber very shallow; pupil dilated, and entirely irresponsive

to eserine; intense injection of ciliary region; great pain. The eye was excised on the 10th day after the onset.

In the later stages of primary glaucoma, atropine can hardly increase the obstruction at the outlet of the eye, for the periphery of the iris is already firmly adherent to the opposing surface of the cornea, and the ciliary processes are atrophied and retracted; in many cases moreover, the pupil is already widely dilated, and is uninfluenced by mydriatics. Fig. 3 shows the relations of the parts in a specimen of chronic primary glaucoma.



Fig. 3.

FROM A SPECIMEN OF CHRONIC GLAUCOMA OF LONG DURATION
(MAGNIFIED 15 DIAMETERS).

The patient was a healthy man, aged 69. Vision had failed gradually without pain. The whole duration of the disease prior to excision was probably about 12 months; the eye had been quite blind for 5 months; it was excised on account of a recent outset of vascular injection with severe pain.

When an eye of normal tension is rendered glaucomatous by the use of atropine, it is reasonable to suppose that the angle of the chamber was, beforehand, already dangerously narrow, and therefore prone to obstruction whenever any unusual dilatation of the pupil should occur.

Eserine, like atropine, produces its most marked effects in the earlier stages of primary glaucoma, and especially in the acuter forms. By attenuating the iris it relieves the compression to which its peripheral portion is subjected between the ciliary processes and the cornea

(vide Fig. 2), and thus tends to re-establish an access to Schlemm's canal.

Occasionally the reduction of tension is complete, and the glaucoma is permanently cured. It has been shown elsewhere how a state of high tension intensifies itself in a vicious circle; how the eyeball becomes locked, as it were, and is unable to recover of its own accord even though the exciting cause may have completely disappeared. In this state of things, provided it has not been of long duration, eserine steps in with admirable effect; it unlocks the outlet for the pent-up fluid, the turgid ciliary processes subside, and everything returns to its previous condition. But although really cured for the time being, an eye which has once suffered in this way must be looked upon as liable to a repetition of the mischief at any time should the exciting cause recur.

It is in the sudden but comparatively mild attacks which come and go at intervals during the premonitory stage of the disease, when the outlet of the chamber appears to be constantly on the brink of danger, but never occluded for very long together, that eserine acts with the greatest promptness and certainty. In very severe attacks of acute glaucoma adhesion of the iris occurs early, sometimes certainly within two or three weeks, and the pupil soon loses its contractility, hence all chance of benefit by eserine soon disappears in such cases. In the case from which Figure 2 was taken, an exceptionally sudden and severe one, eserine applied on the eighth and ninth days proved powerless to contract the pupil and gave no relief.

In simple chronic glaucoma, also, eserine will sometimes cause a temporary reduction of tension, and a corresponding improvement of vision, but, as far as my own experience goes, the improvement is never permanent. In this form of the disease the primary obstructive change, as I have endeavoured to show elsewhere, is of a persistent nature, and is not caused to subside, as in the case

of acute glaucoma, by a temporary reopening of the angle of the anterior chamber.

In the advanced stages of glaucoma, whether acute or chronic, when the iris is atrophied throughout, and when its periphery has formed a solid adhesion with the cornea (*vide* Fig. 3), it is obvious that eserine cannot in any way relieve the obstructed outlet, and in this condition its employment is, I believe, never beneficial.

Here it must be noted that when eserine fails to do good it is very likely to do harm. When the change in the position of the iris which has been described, and which may be termed, for want of a better expression, the *mechanical* effect, is unattainable, then the other change which eserine induces, namely the *vascular* effect, is distinctly injurious. The increased flow of blood to the iris and ciliary processes intensifies the mischief which it is our object to relieve; the glaucomatous tension may be increased instead of being lessened; hæmorrhage from the over-loaded vessels has been known to follow; and in any case the pain which the patient has suffered is likely to be increased.

In an earlier work on this subject I suggested that the specific effects of eserine and atropine in primary glaucoma may be also due, in part, to their influence over the form and diameter of the lens, whereby eserine tends to remove the margin of the lens from the ciliary processes, atropine to approximate it to them; but this idea, though perhaps true to a certain extent, will not admit of wide application, for we witness the power of these drugs for good and evil in cases of glaucoma at advanced periods of life when the form of the lens is no longer influenced by the ciliary muscle.

Laqueur has drawn attention to a circumstance concerning the onset and disappearance of glaucomatous attacks, which is very significant when considered in connection with the effects of atropine and eserine.* He

* Das Prodromalstadium des Glaucom's. (Von Graefe's Archiv, xxvi., ii., p. I.)

points out that the usual exciting causes of the mild attacks and exacerbations which occur during the so-called premonitory stage—namely hunger, cold, fatigue, respiration of impure air, nausea, fright, anger, sleeplessness, anxiety—are conditions of nervous depression which are associated with *dilatation of the pupil*; and on the other hand, that the influences under which these premonitory attacks commonly subside spontaneously—namely, refreshment by warmth and food, and more especially by sleep—promote *contraction of the pupil*. A walk in the bright sunshine has been known by Laqueur to cut short an attack. According to my own experience, sleep, even though it be of only five or ten minutes duration, has in many cases a most striking influence for good. During sleep the pupil, as is well known, is greatly contracted.

Further, it must be noted that eserine and atropine are not the only therapeutic agents which exert a specific influence on glaucomatous tension. Other myotics and mydriatics act in the same manner. Duboisine has been known to induce glaucoma, and pilocarpine has been known to cure it.

[*To be continued.*]

J. R. WOLFE. On Diseases and Injuries of the Eye; a course of systematic and clinical lectures. (*London, Churchill, 1881*).

The Glasgow medical students may be congratulated on the lectures they have the opportunity of attending, and Dr. Wolfe need make no apology for publishing them *in extenso*, although it is not likely that his work will take the place of other more systematic treatises.

As the whole subject of ophthalmology is discussed in 446 pages it may be taken for granted that many important points can only be dealt with in a very sketchy manner. The teaching is, in the main, sound and trustworthy, the faults being rather those of omission than of commission, but there are some points to which exception may be taken.

The use of sulphate of copper in granular ophthalmia is spoken of very disparagingly. The treatment Dr. Wolfe has uniformly employed during the last 10 or 11 years, has been scarification of the conjunctiva, the instillation of syrup of tannin, friction, and atropine, and from this method he has never seen any reason to depart.

It is remarkable that there is no mention of eserine in the lecture upon corneal ulceration. A remedy which has been praised by so many oculists, deserves at least to be warned against if it is not considered an effective therapeutical agent.

In conical cornea, too, Dr. Wolfe does not seem to have made any trial of this remedy, which would seem very suitable for those cases that are not bad enough to require operative interference.

Our experience does not coincide with Dr. Wolfe's as to the utility of de Wecker's needles for tattooing leucomata. For some time past we have given up all special instruments and used the ordinary broad needle sold in ophthalmic instrument cases; it certainly has produced quicker and more satisfactory results than we have ever seen effected by any other instrument.

Dr. Wolfe draws no distinction between sympathetic irritation and sympathetic inflammation, and adheres to the doctrine which until last year was almost universally accepted, that the ciliary nerves are the channel through which the injured eye affects the sound one. No mention is made of the important observation of Leber, (*Graefe's Archiv.*, xxvii. 1, p. 325,) who found evidences of the advance of micro-organisms up the nerve sheath of the injured eye towards the sympathetically affected one, and which, if corroborated, as it has already been by at least one observer, will probably re-establish the old theory of Mackenzie, to the destruction of the ciliary nerve hypothesis so long dominant.

The description of Graefe's operations for cataract, the modified linear extraction, is incomplete, there being no directions given to regulate the size of the incision,—perhaps the most important point in any cataract extraction. It is in this particular too that the author's own operation, which aims at making an incision extending just 1 mm. more than one third of the corneal circumference, breaks down. Who can estimate the

size of such an incision with even the roughest approximation to accuracy! The incisions made by the best operators probably do not differ so much in size, or perhaps even in position, as one would suppose from merely reading the descriptions given of the various operations, and a surgeon who has not invented an operation of his own, will be inclined to adopt that method which enables him to judge most accurately what the size of his incision should be, both before and after the point of the knife has entered the anterior chamber. The most simple method yet proposed for obtaining the necessary data seems to be de Wecker's 3 mm. flap. The merest tyro can make a puncture somewhere in the corneo-sclerotic junction, and having done so, all that de Wecker asks him to do is to compare the amount of clear cornea left between the edge of the blade and the edge of the cornea with the breadth of the knife. This is something that can be done by the unaided eye, and de Wecker deserves the thanks of all young surgeons hitherto bewildered amidst the mazes of squares, triangles, diameters, tangents, and circumferences.

There are many other points which deserve notice, such as Dr. Wolfe's operation of transportation of skin for the cure of ectropium, which, since its publication, has proved useful in the hands of many other operators, and which possesses advantages over all the methods hitherto employed.

The theory of glaucoma too deserves mention. Dr. Wolfe considers glaucoma to be the result of disease of the sympathetic nerve, but whether an hyperæsthesia or a paralysis, is uncertain; indeed, to judge by the text, both conditions are present simultaneously; but we must refer those interested in the author's views on this and other points to the work itself.

J. B. Story.

PAGENSTECHER, H. (Wiesbaden). *Massage in diseases of the eye.* (*Arch. of Ophth., December, 1881, p. 424.*)

Pagenstecher called attention to this mode of treatment in the *Centralblatt für Augenheilkunde* for December, 1878; he now publishes his further experience of it, which has been very favorable.

Massage consists in rubbing the surface of the eye with the eyelid in a particular manner. The thumb or forefinger is pressed lightly on the edge of the upper or lower lid, and the lid is rubbed as rapidly as possible over the eye usually in a radiating direction, *i.e.*, from the centre of the cornea towards its margin. The rubbing must be both light and rapid. The massage of any one particular portion of the ciliary region, which is generally all that is required, occupies a minute or two; it is usually practised once a day, but sometimes twice if well borne. Pagenstecher at present always uses the yellow precipitate ointment, made with vaseline, simultaneously with the mechanical treatment; in addition to its specific therapeutical effects, it does good by lubricating the surfaces.

The effect of massage, especially when practised in the radiating manner above mentioned, is to empty all the blood-vessels and lymphatics at the sclero-corneal margin, and thus to promote a more rapid absorption of any exudations which surround them; at the same time the vaso-motor system is stimulated, and a better contraction of the vessels ensues. In some cases it acts as a depletive, producing a distinct decrease in the tension of the eye; in others, by its stimulating action, it aids the formation of new vessels, and thus does good when the processes of nutrition and absorption are torpid.

The conditions to which massage is applicable are certain affections of the cornea, conjunctiva, sclera, and ciliary body, *viz.* :—

1. Opacities of the cornea resulting from pannous keratitis, scrofulous superficial keratitis, and even parenchymatous keratitis. When, after corneal vascularity has subsided, such opacities remain stationary, massage re-excites a moderate vascularity, and promotes removal of the opacity. The irritation produced must be of moderate degree; it must wholly disappear in half an hour.

2. Chronic pustular conjunctivitis, especially in old people. Forms of chronic conjunctivitis in which there is a hypertrophic thickening of the membrane close to the margin of the cornea, occurring either as an elevated yellowish wall surrounding the cornea, or as one or more thick vascular papules towards which large veins course from the conjunctiva. A form of conjunc-

tivitis, chiefly caused by external irritation, in which the inflammation occurs in a triangle, with its base at the outer, rarely at the inner, margin of the cornea, the membrane being swollen and of a greyish yellow tinge, and the conjunctival and subconjunctival vessels swollen.

3. Forms of scleritis or episcleritis in which fixed nodules appear in or on the sclera, often accompanied with severe ciliary neuralgia. Constitutional treatment is required in addition to the massage, and the latter is not employed if there be iritis; it appears to hasten the absorption of the nodule. Chronic episcleral inflammation, without iritis, leading after long periods to alterations in the tissue of the sclera.

4. Circumscribed affections of the ciliary body. In the one case thus treated a localised congestion of long standing in the upper part of the ciliary region, associated with extreme sensitiveness and pain after efforts of accommodation, was cured by massage.

Speaking generally, Pagenstecher recommends this treatment in chronic inflammatory processes in the anterior segment of the eye. It is contraindicated when it is found to cause permanent or excessive injection, and especially if there be photophobia and lachrymation. It is not to be employed in presence of iritis.

R. DEUTSCHMANN, (Goettingen). **Investigations on the Pathogenesis of Cataract.** (*Von Graefe's Archiv.* xxiii., 3, p. 112; xxv., 2, p. 213; xxv., 4, p. 247.; xxvi., 1, p. 135),

These papers record a series of observations, chiefly experimental, partly also clinical, on the etiology and nature of cataract. The first paper deals with diabetic cataract. Kunde was the first who succeeded in producing cataract by injecting different solutions into the circulation of living animals; he used for this purpose principally common salt (Na. Cl.) and grape sugar. His experiments have since been frequently repeated, and always with the same results; but the results have received different interpretations.

Deutschmann made a series of experiments of a similar kind, extended them in various directions, and arrived at the following conclusions:—

1. The lenses of animals, when placed in solutions of salt and of sugar of a certain degree of concentration, become cataractous through loss of water; at first they shrink, afterwards they swell through absorption of fluid and during the process the tissue of the lens is to some extent destroyed.

2. Other things being equal, in order to produce cataract by abstraction of water, a much stronger solution of sugar is required than of salt. In this respect a 5 per cent. sugar-solution is about equivalent to a $2\frac{1}{2}$ per cent. salt-solution.

3. Cataract due to abstraction of water is also produced temporarily when a concentrated solution of salt or sugar is injected into the anterior chamber of living mammals; a slight diffuse opacity of the cornea occurs at the same time. The opacity of the lens is only superficial because the aqueous humour rapidly dilutes the injected solution, and causes its action to be of very short duration. It vanishes spontaneously sooner or later.

4. The opacity of the lens which follows the injection of salt or sugar into the circulation of the living animal is produced in like manner by the abstraction of water; at the same time, the percentage of these substances in the aqueous and vitreous is found to be increased.

5. All cataracts produced by the abstraction of water present the same microscopical changes, viz., plentiful formation of bright vacuoles, with double outlines, in the epithelium of the capsule and the fibres of the lens.

6. A lower concentration of the solutions causes only a swelling of the lens, with a scarcely noticeable superficial opacity.

7. In highly concentrated solutions, lenses which have been deprived of their capsules undergo the same changes as do those which are entire, but in weak solutions they swell greatly and gradually become opaque throughout.

8. The opacity of the cornea which follows the injection of a strongly concentrated solution into the anterior chamber is due to alterations in the endothelium of Descemet's membrane.

9. The occurrence of cataract in diabetes mellitus cannot be explained on the supposition that water is abstracted

from the lens by the highly concentrated fluids of the eye ; for a percentage of sugar in the aqueous or vitreous fluids, such as is necessary to produce an opacity of the human lens by abstraction of water, is, according to all chemical analyses of the aqueous humour in diabetic patients, an impossibility.

10. The anterior capsular epithelium is of no value in protecting the lens against possible opacity through imbibition of aqueous humour.

The second paper deals with the nature of senile cataract. Otto Becker, in his excellent monograph on the pathology and therapy of the lens (*Graefes-Saemisch Handbuch v.*, p. 157-520) gives, in addition to a summary of the existing knowledge of the subject, some new ideas as to the causes of senile cataract. His theory is essentially mechanical. As age advances the nucleus of the lens shrinks, and hence arises, in one place or another, an interruption of continuity between the layers of fibres. The fluid which fills the newly-formed space is at first possibly nothing more than a so-called interstitial fluid ; but very soon the contents of the lens-fibres escape and are added to it, and thus a real opacity begins.

Deutschmann does not assent to this explanation of Becker's. If the process of sclerosis in the nucleus be due to the transformation of soluble into insoluble albumen (which is scarcely to be doubted) the latter will simply separate itself from the water without necessarily causing any change of volume. As the sclerosis regularly advances, the water which the nucleus loses will find its way slowly out without harm to the substance of the lens, while, equally slowly and regularly, the whole volume of the lens will diminish ; in which case no mechanical separation of the cortical layer, such as is supposed by Becker, will take place. According to Deutschmann, the beginning of senile cataract is caused by the degeneration of lens-fibres within an otherwise healthy lens, a further factor in which alteration is the unequal sclerosis of the ageing lens. The water parted with by the nucleus (for the sclerosis begins in the centre) is innocuous to a regularly and symmetrically

hardening lens, though it causes opacities in a lens with irregular and imperfect sclerosis through the soaking to which some of the fibres are exposed. This first change in the lens is followed by a more active interchange between the altered lens-elements and the adjacent media, especially the aqueous. The lens gives up albumen to the aqueous in exchange for water, which itself then helps to injure the lens-fibres by imbibition.

In addition to the foregoing conclusions Deutschmann notes the following points concerning the causes of senile cataract :

1. The process of sclerosis in the senile lens is accompanied by a loss of water which can be proved by actually weighing, and so measuring the percentage of water in the lens.

2. The living lens is continually surrounded, within its capsule, by the thinnest possible layer of fluid albumen, and it is probably through this that the processes of nutritive interchange are carried on between the lens on the one hand and the vitreous and aqueous on the other. From the vitreous the lens receives albumen, returning in exchange water and salts, while from the aqueous it receives water, and gives up in exchange salts and a small amount of used albuminous material.

3. The cause of the permanent transparency of the living lens lies neither in the anterior capsular epithelium, nor in the capsule, but must be ascribed to the vital qualities of the lens itself; no explanation of it can yet be given. In the dead lens opacity is produced by swelling and destruction of the fibres, and albumen is yielded up in increased quantity to the aqueous humour.

4. The opaque cortical substance of senile cataract contains a considerably higher proportion of water than does transparent lens matter of equal age, provided that the cataract is not overripe and shrunken.

5. The solid constituents of senile cataract are proportionately diminished as compared with those of the non-cataractous lens of equal age.

6. During the ripening of senile cataract the aqueous humour is richer in albumen than the normal aqueous.

7. Injection of albuminous serum into the anterior-chamber of living rabbits does not produce cataract.

8. Hence follows the conclusion that the increased proportion of albumen which is present in the aqueous humour during the formation of senile cataract is the result and not the cause of the cataract.

9. Naked eye and microscopic changes identical with those characterising senile cataract can be experimentally produced in the freshly excised and decapsulated human lens by exposing it to the gradual action of watery vapour.

10. The consistence of senile cataract and the length of time occupied in its development depend on the extent to which the cortical substance possesses the faculty of swelling.

11. Clinical experience and experiment show that this faculty varies widely.

12. Comparative examinations of a senile shrunk overripe cataract and of a normal lens of the same age show a decrease, in the former, both of water and of solid constituents.

The third paper contains clinical observations relating to the same subject. Systematic examination of the urine of cataract-patients in the clinique at Goettingen, showed that a very large percentage had albuminuria and other symptoms of chronic nephritis; the amount of albumen was usually extremely small, but casts in the urine and hypertrophy of the heart proved the existence of the nephritis. Deutschmann believes therefore that the coincidence of chronic nephritis and cataract is not accidental, but that we must recognize a nephritic cataract just as we recognize a diabetic cataract, the cause in both cases being constitutional. Nephritic cataract, concerning the occurrence of which Deutschmann gives statistics in a later communication (*v. Graefe's Archiv*. xxvii, 1. p. 315), has no well-marked characteristics; the individuals affected were not marastic; marasmus, therefore, cannot be the cause; their ages varied widely, viz. from 30 to 62 years, and in the majority of cases the cataract alone was the first conspicuous symptom of constitutional disease.

The fourth part treats of the changes which the lens undergoes during suppurative processes within the eye. Authors differ as to whether pus cells can originate in the intracapsular epithelium and fibres of the lens, or whether, when found within the capsule, they have in every case migrated thither from without. Deutschmann declares decisively for the latter view. By injecting pus into the aqueous and vitreous chambers of animals he set up suppurative processes of different degrees of intensity; turbidity and softening of the lens, and the aggregation of pus cells within it, followed.

On examining the eyes at different stages of the process, the following changes were observed in cases of acute suppuration in the anterior chamber. Dulness of the capsule, due to erosion of its surface, occurred in the area corresponding to the pupil, elsewhere the membrane appeared to be kept intact by the protection of the iris. A little later the microscope showed the passage of pus cells through the thinned and eroded portion into the substance of the lens, together with more or less destruction of the capsular epithelium and lens-fibres. Carefully examined in section the eroded capsule presented the appearance of minute holes passing through it, with here and there pus cells actually sticking in them. As the aggregation of pus cells increased, and the lens-fibres were more and more disturbed and destroyed, a cataractous condition visible to the naked eye was set up. Ultimately, if the process went far enough, the lens became a mere sac of pus, which ruptured and shrank together.

Acute suppuration in the vitreous chamber produced very similar changes, beginning in the posterior chamber, and ultimately affecting the whole lens as already described.

Examinations during the early stages showed positively that so long as the capsule remained intact, or was only superficially eroded, even though its surface might be thickly coated with pus, no single pus cells, and no proliferative changes, were present in the lens.

The mode in which pus causes erosion and perforation of the capsule, remained undetermined. An experiment intended to test its dependence upon a hypothetical chemical action gave no conclusive result.

Chronic suppurative inflammation was set up by injecting tuberculous matter with strict antiseptic precautions. The effects upon the lens differed somewhat from those which accompanied acute suppuration. When the anterior chamber was selected the difference was chiefly one of degree. The process was slower and less intense. Pus entered the lens in smaller quantity ; the lens assumed the characters rather of an ordinary soft cataract than of a sac of pus ; the aqueous humour obviously entered the capsule through the minute channels created by the immigrated pus cells, and caused the cataractous condition by maceration, while the pus itself was of less effect.

When, on the other hand, the vitreous chamber was selected, the difference was somewhat greater. The destructive changes were confined to the posterior capsule, and chiefly to the posterior pole ; the anterior capsule remained intact, but its epithelial lining underwent a remarkable proliferation.

Deutschmann's results confirm the assertion previously made by Becker (*Graefe-Saemisch Handbuch v.*, p. 193), that all pus cells found within the cavity of the lens have migrated thither from without.

AYRES, W. C., (New York). Contributions to the knowledge of new formations in the eye. (*Arch. of Ophth.*, September, 1881, p. 269).

The following observation recorded by Ayres is especially interesting when noted in connection with Deutschmann's description of the passage of pus cells through the capsule of the lens (*vide* foregoing abstract.)

The lens of a gliomatous eye was found to be infiltrated with glioma cells. The cells had made their way along one side of the ciliary body, and had passed along the suspensory ligament up to the lens-capsule, both within and without the canal of Petit. Outside the canal they seemed to have merely impinged upon the capsule, and passed around it ; inside the canal they had forced themselves in between the fibres of the suspensory ligament and the lens capsule, they had entered into the substance of the capsule itself, splitting it into distinct layers, and they had perforated the capsule and travelled along

within it. Those which travelled towards the anterior pole had passed over the surface of the lens fibres, forming a zone of glioma cells between the anterior cortex and the capsular epithelium; those which made their way backwards did not follow the capsule, but passed in between the individual lens-fibres, so as to dissect them one from another.

Another specimen is described in which the whole of the cortex of the lens had been replaced by true bony tissue presenting a perfect system of canals and typical bone-corpuscles, with the exception of a narrow zone of connective tissue holding the same position as the glioma cells in the previous case. The ossification had taken place in layers more or less parallel to this zone. The lens appeared to be of normal size; the capsule had nearly its normal curvature, and was smooth, except at one place near the attachment of the suspensory ligament, where a break had occurred. There were no bone-corpuscles elsewhere in the eye; the eye had been lost through severe inflammation in childhood; there was no history of injury.

OPHTHALMOLOGICAL SOCIETY OF GREAT BRITAIN.

THURSDAY, JANUARY 12th, 1882.

WILLIAM BOWMAN, F.R.S., President, in the Chair.

A case of acute vascular disease, with retinal hæmorrhages.—

Dr. Stephen Mackenzie narrated a case of acute vascular disease with retinal hæmorrhages occurring in a blacksmith aged 28, and terminating fatally within one week of the onset. The patient's habits were such as to exclude the possibility of scurvy. His attack commenced with swelling, pain, and bleeding of the gums, abundant purpuric spots on the skin, the vomiting of bloody fluid and delirium at night. On the fifth day of the attack he came under observation and was found well-nourished with numerous hæmorrhagic extravasations into the skin, but no subcutaneous or inter-muscular extravasations. Highly anaemic (corpuscles, 24.9 to 27.5 per cent: hæmoglobin 25 to 22 per cent.) and the temperature rising to 105° fahrenheit.

Antiscorbutics were of no use, and transfusion was followed by only a brief rally. The autopsy revealed only subarachnoid and subperitoneal hæmorrhages. Dr. Mackenzie referred to scurvy, idiopathic anæmia, hæmophilia, and purpura hæmorrhagica as the most important vascular diseases attended with retinal hæmorrhage, and considered this case to fall under the last head.

The President inquired as to the presence of bacteria in the blood, and was informed that none were detected, but that the microscopical examination, which was made of the blood, was not such as to exclude the possibility of their presence having been overlooked.

Double optic neuritis, following purpura.—Mr. Lawford communicated such a case occurring in a girl, aged twelve, who had been under the care of Mr. Nettleship. Some months had elapsed between the subsidence of the purpura and the impairment of vision which accompanied the neuritis. Both the amblyopia and the neuritis had proved transient: and the latter was probably a localised papillitis, rather than a descending neuritis.

Dr. Stephen Mackenzie elicited that there was no heart disease in Mr. Lawford's case and regarded it as one of purpura rheumatica, from the fact that the spots appeared in crops the first thing in the morning, and was sceptical whether the observed neuritis was in any way associated with the antecedent purpura.

Epithelioma of the cornea.—Mr. James E. Adams exhibited a macroscopic and microscopic specimen, together with a drawing of the latter, from a tumour occurring in a man aged 50. In 1877, Mr. Adams shaved off from the conjunctiva a small, hard, lobulated growth, situated over the lower and inner part of the ciliary region and overlapping the cornea. At that time a single bleeding spot in the exposed sclera was cauterized with nitrate of silver, and indicated the probably deep vascular connection of the growth. The tumour did not recur for nearly four years, when it reappeared in a different position, and grew rapidly, so that Mr. Adams excised the globe just four years after the first operation. The growth proved *not* to have invaded the deep tissues, and to be an undoubted epithelioma.

The President recognised that such cases often ultimately necessitated a removal of the globe, but favoured the practice of deferring that radical measure until the implication of the deep tunics of the eye had been demonstrated by repeatedly shaving off the superficial growth and carefully applying strong escharotics.

Two cases of exceptionally high degree of spasm of accommodation, were related by Mr. James E. Adams. A girl, aged 13, whose refraction was really hypermetropic, and who had recently recovered from diphtheria, presented a high degree of simulated myopia shortly after resuming her studies. The degree of simulated myopia was in no way reduced during an ophthalmoscopic examination of the eyes in a thoroughly darkened chamber, but the spasm of accommodation was completely relaxed three hours after the instillation of atropine. The second case occurred in a man aged 20, and was remarkable solely for the length of time during which the accommodative spasm resisted the action of atropine.

Mr. Frost suggested that the excessive accommodation in the girl who had recently recovered from diphtheria, might possibly be due to an excessive stimulation originally exercised upon a partially paralysed muscle, and subsequently operating when the post-diphtheritic paresis had passed off.

Hard chancre on the conjunctiva of the lower lid.—Mr. Wherry (Cambridge) described a typical hunterian sore occurring in the sulcus between the lower lid and the globe of a shepherd aged 23; there was a good deal of chemosis, also enlargement of the parotid and sub-maxillary lymphatic glands. Mr. Nettleship referred to a similarly placed, similar sore seen in a girl aged 3 years. The mode of infection had been traced in neither case; but in each the diagnosis of the primary sore had been corroborated by the development of secondary syphilitic manifestations.

Diabetic cataract, maturing more slowly in a partially dislocated lens than in the fellow-normally placed-lens.—Such a case was narrated by Mr. Nettleship, who questioned whether the rupture of the suspensory ligament had prevented the diabetic state from having so great an influence on the lens in the injured as in the sound eye.

The President suggested that as, when the lens lost its natural connection, the normal processes of nutrition went on less rapidly so, under like conditions, it might be less affected by any morbid state.

An improved self-registering perimeter was exhibited and described by Prof. McHardy, who referred to the perimeters of Förster, Aubert, Carter, and Stevens, stating that Förster's instrument did its work so admirably, and so well illustrated the main secrets of the practical applicability of a perimeter, that it was not easily improved upon. That Aubert's perimeter was no less cumbrous, but less mechanical, and more tolerant of rough usage than Förster's. That in Carter's perimeter, efficiency was sacrificed to cheapness and portability. That Steven's perimeter displayed a highly important and novel feature in the introduction of means by which the perimetric measurements were registered automatically. That the self-registering perimeter which Dr. Stevens, of New York, exhibited in the ophthalmic section of the International Medical Congress, London, August, 1881, was exceedingly faulty in execution, as its inventor confessed it had been hurriedly constructed, so as to be shown at the Congress. Prof. McHardy had discussed with Dr. Stevens the various parts of his instrument with the result that Dr. Stevens had a far less faulty instrument made here than the one he brought; nevertheless the improved pattern of Dr. Stevens' perimeter appeared to be inferior in very many respects to either Förster's or Aubert's, while a decided advance thereon owing to the principle of automatic registration. Prof. McHardy hoped that the instrument he exhibited would prove superior to any *one* of the perimeters mentioned, but did not claim to have originated any important and useful novelties in the perimeter, which he had designed with a view to reproducing *every one* of the many good features of other instruments, whilst striving to minimise the defects which experience had demonstrated therein.

The pertimeter fitted, without taking to pieces, into a flat box one-half metre square, and 12 cm. deep. The semi-circle of Förster's instrument was represented by a quadrant 5 cm. wide, along which a carriage was moved by an endless band of steel piano wire, connected with a simple mechanical arrangement,

which set in movement two registering pointers, from either of which a chart could be pricked off, according to the scale preferred. The fixation point was the zero of the charts, and was arranged so that its height as well as the height of the attached chin-rest could be independently varied to suit different patients. The instrument was provided with an addition suggested by Landolt, for securing an absolute fixity of the head during examinations of the field of direct vision. The arc was graduated so as to serve for measurements of the angle of strabismus. The inventor acknowledged the prompt enterprise and courtesy Messrs. Pickard and Curry had displayed in carrying out his ideas and drawings for the pertimeter, which would be about the same price as Förster's.

Specimens shown by card:

Fibro-sarcoma of lachrymal gland.—Mr. Henry Power exhibited a microscopical section of a tumour which he had removed on December 22nd, from the patient whom he showed the preceding meeting of the society. The girl, aged 16, had noticed an enlargement in the region of the left lachrymal gland for upwards of two years, the gland was found partly spread over and partly imbedded in the tumour.

Intra-ocular tumour.—Mr. Henry Power showed a girl, aged 4 years, with a whitish, lobulated growth protruding into the vitreous, and apparently springing backwards from the lower and outer part of the ciliary processes. The retina was infiltrated with deposits which extended as far as the disc. The eye had been noticed "looking strange" for nine months. The tension was normal. Enucleation was to be performed the next day. There was a history of mammary scirrhus in a maternal aunt of the patient.

M. Macdonald McHardy.

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RECENT LITERATURE.

A. RETINA. OPTIC NERVE. CENTRES.

- BRAILEY, A. W. On some points in relation to intra-ocular glioma.
Guy's Hosp. Reports for 1880-81, p. 497.
- DAGUENET. Rétinite traumatique.
Recueil d'ophth., Dec. 1881, p. 722.
- DRESCHFELD, J. Two cases of acute myelitis, associated with optic neuritis.
Lancet, Jan. 1882, p. 8 & 52.
- FERE, CH. Des phénomènes oculo-pupillaires chez les hystéro-épileptiques.
Progrès méd. Nr. 46.
- HERDEGEN, M. On the so-called concussion of the retina.
Arch. of Ophth. Dec. 1881, p. 399.
- HINE, J. E. Paralysis, probably syphilitic, affecting in rapid succession both legs and both arms; impaired vision; optic neuritis; gradual recovery under large doses of Iodide of Potassium. Under the care of Dr. Tuckwell.
Lancet, Jan. 1882, p. 62.
- LINNELL, E. H. A case of left-sided binocular hemianopia, with report of autopsy and microscopical examination.
Arch. of Ophth. Dec. 1881, p. 446.
- NIMIER. De la région maculaire au point de vue normal et pathologique. (Suite et fin.)
Arch. génér. de méd. October, 1881.
France méd. Nr. 48 du 22. Oct. 1881.
- OUGHTON, T. The theory of corresponding points in single vision.
Lancet, Dec. 1881, p. 1121.
- RIEGER AND V. FOSTER. Auge und Rückenmark.
v. Graef's Arch., XXVII, 3, p. 109.
- SAMELSOHN, J. Zur Frage des Farbensinncentrums.
Centralbl. f. med. Wissensch. Nr. 47 & 50.
- SCHUBERT, P. Zur Casuistik der Retinitis syphilitica.
Centralbl. f. prakt. Augenh. Nov. 1881, p. 329.

SECONDI. R. Lettera (casi di guarigione permanente del distacco retinico).

Bolletino d'oculistica. Anno IV. Nr. 3, p. 29.

B. UVEAL TRACT. VITREOUS AND AQUEOUS. LENS.

DUYSE, VAN. Le colobome de l'oeil et le kyste séreux congénital de l'orbite.

Ann. d'oculist LXXXVI., p. 144.

FUCHS. E. Das Sarkom des Uvealtractus. Wien 1882. W. Braumüller.

GALEZOWSKI. Des cataractes traumatiques.

Recueil d'ophth., Dec. 1881, p. 705.

GIRAUD-TEULON. Contribution à l'étude de l'électrothérapie dans le traitement des opacités du corps vitré.

France Méd. Nr. 47, 20. Oct. 1881.

GIRAUD-TEULON. Sur un travail de M. Nicati, intitulé: de la guérison du glaucome par la sclérotomie équatoriale transverse.

Bull. et mém. de la société de chir. de Paris. Nr. 8, 9.

HORSTMANN. Zur Lehre von den sympathischen Augenerkrankungen.

Deutsche med. Wochenschr. Nr. 45

HORSTMANN, C. Ueber recidivirende Iritis.

Centralbl. f. pr. Augenh., Oct. 1881, p. 297.

KNAPP, H. Traumatic suspension of the anterior chamber, myopia; restoration of the anterior chamber; acute glaucoma; cured with eserine.

Arch. of Ophth. Dec. 1881, p. 451.

KNAPP, H. Colouring of the shining reflex at the edge of lenses dislocated in the anterior chamber; a nice clinical experiment.

Arch. of Ophth. Dec. 1881, p. 456.

KOENIGSTEIN, L. Histologische Notizen: I. Ueber die Nerven der Sclera. II. Ueber die Pupillarmembran.

v. Graef's Arch. XXVII., 3, p. 56.

MAC GILLAVRY, TH. H. Jets over en naar aanleiding van sympathische Ophthalmie.

Nederlandsch Tijdschrift voor Geneesk. Jaarg. 1881.

OPPENHEIMER, H. S. A case of foreign body, retained in the iris for nineteen years.

Arch. of Ophth. Dec. 1881, p. 450.

- PINI, G. Di nuovo sul glaucoma.
Bollettino d'oculistica. Anno IV. Nr. 3. p. 31.
- SNELLEN, H. Sympathische Ophthalmia. (Voordracht gehouden in de Sectie voor Oogheekunde van het internat. geneeskundig Congres te London).
Nederlandsch Tijdschrift voor Geneesk. Jaarg. 1881.
- TARTUFERI. Un caso di granuloma dell' iride senza cellule giganti.
Annali di Ottalm., Anno X., fasc. 4 & 5, p. 321.
- THUDICHUM, J. L. W. On the colouring matters of the rods and the cells of the choroid coat of the retina (summary).
Ann. Chem. Med., vol. II., p. 64.
- THUDICHUM, J. L. W. Chemical constitution of the crystalline lens of the eye, with reference to the causes and conditions of cataract (summary).
Ann. Chem. Med. vol. II, p. 77.
- UTHMANN, G. Un cas d'iritis diabétique.
France méd. Nr. 44, 13. Oct. 1881.
- WATSON, W. S. A case of eyeball-tension, treated by sclerotomy.
Clin. Soc. Trans., vol. XIV., 1881, p. 5.

C. CORNEA. CONJUNCTIVA. SCLERA.

- BURNETT, S. M. Circum-corneal hypertrophy of the conjunctiva.
Arch. of Ophth. Dec. 1881, p. 414.
- DAMALIX, A. Du traitement des affections chroniques de la cornée par le massage de l'oeil.
Arch. d'ophth. I. Nr. 6. p. 491.
- DENISENKO, G. Untersuchungen ueber die Ernahrung der Hornhaut. Vortrag, gehalten auf der Conferenz der Med. Acad. in Petersburg, 25 April (7 Mai) 1881.
Virchow's Archiv, LXX XVI, 3, p. 511.
- FONTAN, J. Des adéno-papillomes de la conjonctive.
Recueil d'ophth., Dec. 1881, p. 724.
- FUCHS, E. Ueber die Trübung der Hornhaut bei Glaucom.
v. Graef's Arch., XXVII, 3, p. 66.
- HOCQUARD, E. Plaques épithéliales de la cornée.
Arch. d'ophth. I. Nr. 6 p. 481.
- UHTHOFF, W. Ein Fall von ungewöhnlicher Degeneration der menschlichen Conjunctiva.
Virchow's Archiv. LXXXVI. p. 322.

- VOSSIUS, A. Zur Behandlung der Diphtheritis conjunctivæ.
Klin. Mon.-Bl. f. Augenh. XIX., Nov. 1881, p. 418.
- VOSSIUS, A. Ueber das Wachsthum und die physiologische
 Regeneration des Epithels der Cornea.
v. Graef's Archiv, XXVII, 3, p. 225.

D. REFRACTION. ACCOMMODATION. MOTOR APPARATUS

- NIEDEN, A. Ueber Pathogenese und Aetiologie des Nystagmus der Bergeleute auf Grund von Untersuchungen von ca. 7500 Bergarbeitern.
Berl. klin. Wochenschr. Nr. 46.
- SCHENKL. Angeborene mangelhafte Entwicklung des levator palp. sup., des rect. ent., rect. int., rect. sup. und obliq. inf. beider Augen.
Centralbl. f. prakt. Augenh., Nov. 1881, p. 335.
- ULRICH, R. Die Aetiologie des strabismus convergens hypermetropicus. Kassel, Theodor Fischer 1881.
- WARNER. Atrophy of the muscles, supplied by the fifth cranial nerve, with atrophy of the orbital fat on the same side; remarks.
Lancet, Jan. 1882, p. 13.

E. EYELIDS. LACHRYMAL APPARATUS. ORBIT.

- BERGER. Ectropion considérable de la paupière inférieure; Greffe par transplantation d'un lambeau taillé dans la peau du dos, combinée avec la blepharoplastie.
Bull. et mém. de la soc. de chir. de Paris. Nr. 8, 9.
- BROWN, M. H. Case of symblepharon.
Med. News, Jan. 7th, 1882, p. 32.
- DELAPERSONNE. Du chancre palpébral.
Arch. d'ophth. I. Nr. 6 p. 499.
- FOX, T. C. On two cases of chromidrosis, in which a blue-black Pigment exuded from the skin of the circum-orbital regions.
Clin. Soc. Trans., vol. XIV., 1881, p. 211.
- HIGGINS, C. Case of vascular protrusion of the eye-ball.
Med. Chir. Trans., vol. LXIV., 1881, p. 247.
- LAWSON, G. Ectropion of the upper lid remedied by transplanting a piece of skin from the arm.
Lancet, Jan. 1882, p. 13.

- LEGAL. Zur Entwicklungsgeschichte des Thränennasenganges bei Säugethieren. Inaug.-Dissert. Breslau 1881.
Deutsche med. Wochenschr. Nr. 44.
- MANDELSTAMM, E. Ein Fall von Ectropium sarcomatosum nebst einigen Notizen ueber Trachom.
v. Graef's Arch., XXVII., 3, p. 101.
- MONOD. Sur un cas d'épithélioma de l'angle interne de l'oeil gauche, traité par le Dr. Meyer au moyen de l'ablation et de l'application d'une greffe dermique.
Bull. et mém. de la soc. de chir. de Paris. Nr. 8, 9.
- OWEN, LLOYD. Orbital abscess.
Brit. Med. Journal, Dec. 1881, p. 1019.
- TOSSWILL, L. H. On a case of ectropion, successfully treated by transplantation of skin from the arm.
Brit. Med. Journal, Jan. 1882, p. 9.

F. MISCELLANEOUS.

- ALEXANDER. Extraction eines Eisensplitters aus dem Glas-koerper mittels des Electromagneten.
Centralbl. f. pract. Augenh. Nov. 1881, p. 337.
- BERTHOLD. Anwendung der Borsäure bei Augen und Ohren-krankheiten.
Berliner klin. Wochenschr. No. 43.
- CARRIERE, J. Die Augen von Planaria polychroa (Schmidt) und Polycetis nigra (Ehrenberg.)
Arch. f. mikrosk. Anat. Bd. XX., p. 160—173.
- CARTER, R. B. Eyesight, (an address delivered at the Brighton Health Congress of 1881).
Practitioner, Jan. 1882, p. 69.
- CHARPENTIER. L'examen de la vision au point de vue de la médecine générale. Paris 1881.
- Colour-blindness
Lancet, Jan. 1882, p. 76.
- CROVA. Comparaison photométrique des sources lumineuses de teintes différents.
Compt. rend. hebdomad. des séances de l'acad. Nr. 13.
- CRUSTACCAN. Perception of light.
Lancet, Jan. 1882, p. 74.
- DESPAGNET, F. Clinique ophthalmologique du docteur Galézowski.
Recueil d'ophth. Nr. 11, p. 641.
- DONDERS, F. C. Sur les systèmes chromatiques.
Ann. d'oculist. LXXXVI. p. 115—111 & p. 197.

- FERE, Ch. Contribution à l'étude de la migraine ophthalmique
France méd. Nr. 36. 22. Sept. 1881.
- FERNANDEZ, J. S. On the loss of sight in yellow fever.
Arch. of Ophth. Dec. 1881, p. 440.
- FUCHS, E. Ueber eine entoptische Erscheinung bei Bewegung des Augapfels.
v. Graef's Arch. XXVII., 3, p. 33.
- HAENSELL, P. Vorläufige Mittheilung ueber Versuche von Impfsyphilis der Iris und Cornea des Kaninchenauges.
v. Graef's Arch., XXVII., 3, p. 93.
- HERZENSTEIN. Die Sehschärfe untersucht bei 27,682 Soldaten des Charkow'schen Militärbezirks.
Beilage zu den Sitzungsprotocollen der Charkow'schen med. Gesellsch. 1881. Nr. 1.
- v. HIPPEL, A. Ueber einseitige Farbenblindheit.
v. Graef's Arch., XXVII., 3, p. 47.
- HIRSCHBERG. Tumeurs de l'oeil.
France méd. Nr. 32, 15 Sept. 1881.
- HIRSCHBERG, J. On the extraction of chips of iron or steel from the interior of the eye.
Arch. of Ophth. Dec. 1881, p. 369.
- HOLMES, E. L. I.—A case of puerperal retinitis ; blindness ; color-blindness ; recovery. II.—An eye-lash in the anterior chamber.
Arch. of Ophth. Dec. 1881, p. 421.
- Hydrochinon in ophthalmic surgery.
Lancet, Jan. 1882, p. 78.
- JAEGER. Lehrmittel zur Erziehung und Ausbildung des Farbensinnes.
Natur. Nr. 47.
- KUHNT, H. Ueber farbige Lichtinduction.
v. Graef's Arch. XXVII., 3, p. 1.
- LANGE. Aus der St. Petersburger Augenheilanstalt.
Petersburger med. Wochenschr. Nr. 49.
- LEMOIR. Etudes sur l'action chimique de la lumière.
Compt. rend. hebdomad. des séances de l'acad. Nr. 13.
- LUCHHAU. Ohren- u. Augenkrankheiten bei Febris recurrens.
Berl. klin. Wochenschr. Nr. 43.
- MACE, J. et W. NICATI. Contribution à l'étude du champ visuel des couleurs.
Arch. d'ophth. I. Nr. p. 437 & 506.
- OELLER, J. N. Ueber hyaline Gefässdegeneration als Ursache einer Amblyopia saturnina.
Arch. f. pathol. Anatom. LXXVI. p. 329—359.

- OLIVER, C. A. Description of a color-sense measure.
Arch. of Ophth. Dec. 1881, p. 438.
- OSTERWALD, A. Ein neuer Fall von Leukaemie mit doppel-
seitigem Exophthalmus durch Orbitaltumoren.
v. Graefe's Arch., XLVII., 3, p. 203.
- PAGE, C. E. Pink eye in horses.
Boston Med. & Surg. Journal, Dec. 29th, 1881, p. 626.
- PAGENSTECHEK, H. Massage in diseases of the eye.
Arch. of Ophth. Dec. 1881, p. 424.
- PARINAUD. Des troubles visuels qui diminuent l'aptitude à
reconnaître les signaux colorés. Exposé d'un nouveau
mode d'examen.
Ann. d'ocul., Nov.—Déc., 1881, p. 221.
- PURTSCHER. Ein Fall von Erythroptie nach Cataracta trau-
matica.
Centralbl. f. prakt. Augenh. Nov. 1881, p. 333.
- SCHWEIGER, C. Zur Strychnintherapie nebst Bemerkungen
über hysterische Sehstörungen.
Klin. Mon.-Bl. f. Augenh. XIX., Nov. 1881, p. 415.
- SEELY. Moyen d'éviter l'action irritante de l'atropine.
France méd. Nr. 32, 15. Sept. 1881.
- SKREBITZKY, A. Fall von Anophthalmus mit angeborener
Cystenbildung in den unteren Augenlidern.
Klin. Mon.-Bl. f. Augenh. XIX., Nov. 1881, p. 423.
- SNELL, S. On the use of sulphide of calcium in strumious
ophthalmia.
Practitioner, Jan. 1882, p. 17.
- SPALDING, J. A. On massage in ocular affections.
Arch. of Ophth. Dec. 1881, p. 434.
- SZILAGYI, E. Ueber Simultancontrast.
Centralbl. f. d. med. Wiss. 19 Nov., 1881, p. 849.
- The detection of color-blindness.
Med. Times & Gazette, Dec. 1881, p. 713.
- The eyes in insanity.
Lancet, Dec. 1881, p. 1096.
- The New Manhattan Eye and Ear Hospital.
Med. News & Abstract, Dec. 1881, p. 764.
- WHERRY, G. E. Atrophy of the left eye and paralysis of the
fifth and facial nerves.
Lancet, Jan 1882, p. 65.



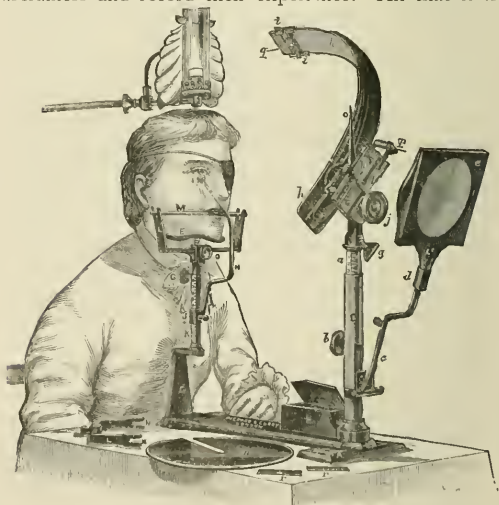
A NEW SELF-REGISTERING PERIMETER.

BY MACDONALD MCHARDY,

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The value of exact perimetric observations, whether of the field of indirect vision, of the field of direct vision, or of scotomata, now no longer needs to be emphasized in the pages of a journal devoted to ophthalmology. Nevertheless, one seeks an explanation of the fact that perimetry is, to this day, so imperfectly and exceptionally applied in the examination of those vast masses of cases which, there is excellent ground for believing, would be sensibly elucidated by careful examination with the perimeter, while they would then materially enhance our as yet little-developed appreciation of the full significance of many perimetric indications. Imperfections serious on account of their number rather than their individual gravity, were conspicuous in every one of the great variety of perimeters known to me, appeared to afford a reasonable explanation of the sadly insufficient use of the instrument, and to furnish a good hope that time might be well spent in designing another pattern of perimeter. If the perimeter, figured and described below, embody the best features of previous ones, without possessing such conspicuous drawbacks as have characterised many earlier "improved" perimeters, it may facilitate the practice of perimetry, and thus tend to extend, develop, and popularise this valuable aid to diagnosis, to the common good of humanity, and therefore to the like satisfaction of all who have devoted attention to

perfecting perimeters. I have worked at and with this perimeter so much that I may not judge it impartially, and believe the time has come to ask my confrères to decide upon its merits, which I hope will prove a sufficient excuse for intruding it upon their attention. I venture to describe the instrument somewhat fully—First, because a knowledge of the construction of any instrument should precede any attempt to make use of it; secondly, that none of the widely scattered readers of this review should be led to order one of these perimeters through an over-drawn estimate of its advantages. I have done my best to render the instrument complete, compact, efficient, durable and simple, and shall feel indebted to all who, having first studied its construction, will then test its usefulness and record their experience. All that it is



essential for the practitioner to know about the construction and mechanism of this perimeter may be learned

from the description and figure. I would advise no unmechanical hand to be induced by curiosity to take to pieces the exceedingly simple mechanism, which I have concealed for its better protection from damage or displacement during use, as any improper interference therewith must render the automatic registration inaccurate.

This perimeter (see illustration) stands on a metal bed-plate, which is steadied by turning the revolving foot (A) at right angles, and is fitted with a box (B) to contain test-objects.

The supports C and D, rising perpendicularly from the opposite ends of the bed-plate, are each provided with telescopic fittings to allow 8 Cm.* (3") of vertical adjustment for the super-imposed gear. The base of the upright (C) is recessed, to give room for the extremity of the revolving quadrant. This upright (C) supports the double chin-rest (E), mounted on the male (F) of a telescopic fitting, which can be retained in any required position by the locking screw (G). The bent stem (H) terminating at one extremity in the porcelain button (I), is detachable from the point where it is hinged to the collar (J), which slides upon the upright (K), K being the female fitting for F.

Landolt's biting-fixation is provided for by the metal-piece (L), which is detachable, and is shown both in position upon, and separate from, the support of chin-rest. The notches (N N) in the extremities of L being shaped to receive the tapered ends of the soft wooden bar (M). The milled head (O) works a screw, clamping the socket of L on to a collar, which is fitted to slide up and down upon F.

The upright (D) contains a male telescopic fitting (*a*) which can be retained in any required position by the locking screw (*b*). To the lower end of *a* is hinged the limb *c*, which can be turned from an oblique to the

* Cm. stands for centimetre, and " for inch.

vertical position. At the upper end of c is a square socket (d), to receive the male fitting of e , which is a double-faced frame to carry a right and a left chart-paper. The upper end of a is expanded, and terminates in the collar (f). This collar (f) is the bearing for a hollow male axle, which may be securely locked in any position by the slightest turn of the screw-head (g), as this works a cone-jam. The hollow male axle (already referred to as turning in the female, f) has attached to its front end the quadrant (h), and to its rear end the slide fittings of a pointer, for the automatic registration.

The quadrant (h) revolves so as to describe a hemisphere around a horizontal axis passing through the centre of the hollow axle, in the same vertical plane as the uprights (C and D). The quadrant is rendered rigid by a backing of **T** brass, and is faced with a band of vulcanite 5 Cm. (2") in width. Its front concave surface is described with a radius of one-third of a metre ($13\frac{1}{3}$ "). A circular piece of white ivory, 5 Mm. ($\frac{1}{5}$ ") in diameter, which is the "fixation" point of the instrument, is let into the vulcanite band, midway between its two edges, and indicates the position of the axis of the imaginary hemisphere. From the centre of this ivory spot a needle-point projects, for the attachment of a piece of paper, should a larger object of regard be required. This "fixation" spot is the zero of the instrument, and 0 is marked, in white, at the commencement of the graduations on the back of the quadrant, against a **V**-shaped notch, cut in both margins of the vulcanite, immediately above and below the fixation spot. Corresponding marks on the collar (f) and on the hub of the quadrant serve to show when the latter is exactly horizontal. Both edges of the back of the quadrant are graduated from 0° to 20° in half degrees, and from 20° to 90° in degrees. These graduations, with the **V**-shaped notches marked 0, allow of the instrument being used as a

strabismometer, for the measurement of either the angle a , or the angle of strabismus.

A carriage (i) (destined to carry test objects) travels rapidly along the front of the quadrant between 0° and 90° , being moved by an endless band, of bronze and cotton-covered steel piano wire, running over an arrangement of pulleys on the back of the quadrant and once and a-half time round a large grooved wheel, which is centred, eccentrically, within the hollow male axle of the quadrant. The tension of the endless band can be regulated to a nicety by turning a capstan-headed screw which shifts the last pulley, and is placed at the extreme end of the quadrant as indicated by q .

The axle of the large-grooved wheel projects through behind the hollow male axle, and three different-sized pinion-wheels are keyed on to the projecting portion. The largest of these three wheels gears with a toothed wheel driven by the large milled head (j). Rotation of this large milled head moves the carriage, by the endless band, by the large-grooved wheel, and therewith the smallest and medium-sized pinion-wheels. The two smaller pinion-wheels (one being twice the diameter of the other) gear with two racks, attached to two slides (k and l), which respectively travel at the relative rate of 2 to 1.

The system of gearing is arranged so that, when all is working, the relative speed of the carriage is to the slow slide as 10 to 1, and to the fast slide as 5 to 1. On each slide there is a cylindrical projection to fit a hollow cylinder terminating in a pointer (p), so that this pointer can be adjusted on either slide. In either case the position of the pointer will be immediately behind the "fixation" spot, when the centre of the carriage is immediately in front of the "fixation" spot. The pointer projects backwards sufficiently to just pierce a chart-paper, fixed in the mount (e) when the limb c is placed upright.

By this arrangement the position of the pointer, as indicated by its puncture on the paper, will always

correspond both with the meridian in which the quadrant is placed and with the position of the carriage upon the quadrant, when the paper is pressed against the pointer.

The rack movements are provided with stops, so that a considerable and needless amount of violence must be practised to throw the parts out of gear.

The fast-travelling slide has been provided to enable charts to be taken of particular areas situated *within* 45° of zero on a larger scale.

A plane disc of vulcanite (*n*), shown detached, 24 Cm. (10") in diameter, fits on to *m*, and conceals the hand or shirt-cuff of the examiner, whilst he turns the milled head *j*. The back of this vulcanite screen may be graduated near the circumference so that the exact meridian occupied by the quadrant will be indicated on the disc by such a pointer as *o*, which can be turned down by the side of *a*; but as this pointer appears of questionable utility, in a self-registering perimeter, it will not be provided unless ordered.

The verniers engraved upon *a* and *K* assist in utilising the telescopic arrangement for adjusting the height of zero according to the level of the patient's eye. With the stem *H* perpendicular, the porcelain button has its apex just 5 Mm. *behind* the centre of the imaginary hemisphere; and the upper edge of the button is just 5 Mm. *below* the level of the "fixation" spot, when the top edge of the collar *J* cuts the same point on the vernier *K* as is just exposed on the vernier *a* above the upright *D*.

Slips of thin vulcanite (*R*, *R*) perforated with series of holes, of stated sizes are provided in the box; any of these slips fit in the spring clips of the carriage, so as to expose, on a uniformly black back-ground, test spots of any desired size, number, or colour; just according to the size of the perforation used, the number of perforations covered behind, and the colour of the paper used to cover them.

The hollow axle upon which the quadrant revolves was designed with a view to letting the patient "fix" a remote object, sighted through a perforation in the position of zero; but I abandoned this idea so as to simplify, lighten, cheapen, and reduce the instrument.

The application of the perimeter is foreign to the purpose of this communication. But it may be well to state that the stem (H) should be either turned aside or detached after it has served to indicate the centre of the hemisphere and for the adjustment of the fixation point on a level with the eye. The method I employ for obtaining a uniform illumination is shown in the wood-cut. Printed skeleton forms * of chart papers are no longer absolutely necessary, as the automatic registration may be recorded on a piece of plain paper: but in any case it is well to prove the centre of the chart paper and the correctness of the automatic registration in the following manner: Move the carriage so that it eclipses zero and press the mounted chart-paper against the pointer so as to ascertain that the paper is properly centred, as it will be if its centre be pierced by the pointer.

THE ACTION OF ATROPINE AND ESERINE IN GLAUCOMA.

BY PRIESTLEY SMITH.

(Continued from page 84.)

Secondary Glaucoma.

In one form of secondary glaucoma, that, namely, which is associated with the growth of *intraocular tumours*, atropine has been known to act as an excitant,

* Messrs. Pickard and Curry, 195, Great Portland Street, W., publish two forms of chart-papers which I have especially designed for use with the two scales upon which this perimeter registers.

just as in primary glaucoma. This is readily explained if it be true, as I believe, that the glaucoma-mechanism is similar in the two cases ; namely, that the encroachment of the tumour on the space occupied by the vitreous body drives the lens, suspensory-ligament, and ciliary processes forward, and compresses the angle of the anterior chamber, just as it is compressed in primary glaucoma through the accumulation of fluid in the vitreous chamber. It is possible that the glaucomatous complication might at its first commencement be temporarily relieved by eserine, but I am not aware that the experiment has ever been tried.

There is, I believe, only one other class of cases in which atropine and eserine have been known to produce any immediate and well marked alterations of tension, namely, cases of secondary glaucoma induced by *dislocation of the lens*. Displacement of the lens into the anterior chamber is sometimes immediately followed by acute glaucoma of great severity ; in other instances, there is an entire absence of the glaucomatous complication. Figs. 4 and 5* explain diagrammatically the reason of this difference.

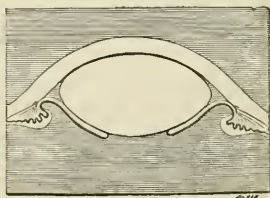


Fig. 4.

DISLOCATION OF LENS INTO ANTERIOR CHAMBER ASSOCIATED WITH SECONDARY GLAUCOMA (IDEAL REPRESENTATION.)

* Figures 4, 5, 6, and 7 are borrowed from an article on Glaucoma by the present writer, in the fourth edition of *Wells on Diseases of the Eye*, revised and edited by M. Macdonald McHardy.

In Fig. 4 the lens is of large size, and completely occludes the pupil; fluid secreted by the ciliary processes can no longer pass from the vitreous to the aqueous chamber, but, accumulating in the former, applies the iris with a constantly increasing pressure against the posterior surface of the lens, and thereby renders its own escape more and more impossible. The periphery of the iris is here represented as being driven forward so as to close the angle of the anterior chamber, and cut off the access to Schlemm's canal. In drawing the figure I was guided as to this point by inference only, but I have since had the opportunity of examining a specimen in which this peculiar disposition of the iris is present in very marked degree. The case will be published shortly.

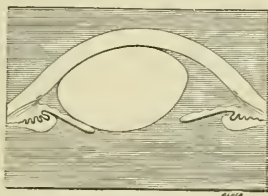


Fig. 5.

DISLOCATION OF LENS INTO ANTERIOR CHAMBER NOT ASSOCIATED WITH SECONDARY GLAUCOMA (IDEAL REPRESENTATION.)

In Figure 5 the lens is smaller and leaves a portion of the pupil free for the passage of the intra-ocular fluid from the vitreous to the aqueous chamber. In cases such as this no glaucomatous symptoms occur. It is easy to imagine how the employment of eserine might convert the non-glaucomatous into the glaucomatous condition, and an instance of this accident has actually been observed;* the displacement of the lens into the anterior chamber gave rise to no increase of tension until, by the use of eserine, the iris was tightened up against its posterior surface, when an acute glaucomatous condition at once

* J. L. Minor, New York Medical Journal, 1881, p. 194.

supervened. This sequence forms a striking contrast to the reduction of tension effected by eserine in primary glaucoma. The opposite effects in the two cases are, I think, irreconcilable with any theory which would attribute the tension-changes to a nervous or vascular influence, but present no difficulty when referred to the altered mechanical relations of the iris.

Some years ago I had under notice a case of secondary glaucoma following a partial *lateral displacement of the lens* by injury, in which the tension was reduced by atropine, a reversal of the influence which this drug exercises in primary glaucoma. When the pupil was dilated widely, and the detached margin of the lens was freely exposed within its circle, the glaucomatous tension subsided, and with it the pain and redness; it returned when the pupil was allowed to recover its usual size; and again disappeared under the use of atropine. It is probable that the glaucomatous condition in such cases is produced by the pressure of the lens, or of the displaced vitreous, against the ciliary processes, and a consequent compression of the angle of the anterior chamber throughout the corresponding part of the circle, and it seems not unlikely that in this particular instance, the enlargement of the pupil permitted some slight alteration in the position of the lens which relieved the pressure of its hidden margin against the ciliary processes.

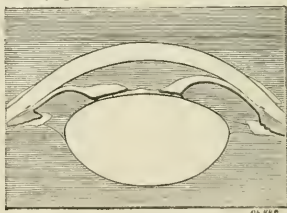


Fig. 6.

FROM A SPECIMEN OF SECONDARY GLAUCOMA INDUCED BY
ANNULAR POSTERIOR SYNECHIA.

Fig. 6 was drawn from a specimen of secondary glaucoma, caused by a complete *annular posterior synechia*; the intraocular fluid, unable to find a passage from the posterior to the anterior aqueous chamber, drives the iris forward, and thereby annihilates the angle of the anterior chamber. Here is a mechanical obstruction which cannot be removed either by eserine or by atropine. Clinically we know that an increase of tension brought about in this way is not relieved by either of these drugs.

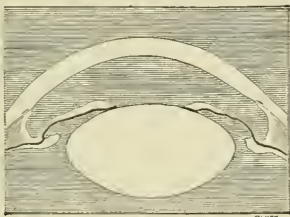


Fig. 7.

FROM A SPECIMEN OF SECONDARY GLAUCOMA INDUCED BY
SEROUS IRITIS.

Fig. 7 was taken from a specimen of persistent *serous iritis* with high tension. The angle of the anterior chamber is here very widely distended, and there is no obstruction at the pupil. In serous iritis the anterior chamber is deep, instead of shallow, as in other forms of glaucoma; the surplus fluid collects in the aqueous and not in the vitreous chamber. It is probable that the impediment to the escape of the fluid lies in the highly albuminous nature of the fluid itself, which hinders its filtration and leads to fibrinous deposits in the tissues lining the angle of the anterior chamber. Neither by contraction nor by dilatation of the pupil could any mechanical relief be afforded to this condition. I am not aware that eserine has ever been found to lower the

tension in the secondary glaucoma of serous iritis. Atropine, in so far as it helps to subdue the inflammatory state, and thereby to restore a healthier secretion, would presumably tend to remove the glaucomatous complication, and it does, I believe, act in this direction, but its influence over the tension is not, in my experience, very rapid or decisive.

There are, undoubtedly, glaucomatous conditions of obscure origin, with regard to which it is impossible to predict what influence atropine or eserine will exert upon the tension, or whether they will influence it at all, but I believe that, in a large number of cases, it is possible to refer the disease to a particular type, corresponding to a particular structural cause, and thereby to gain a definite indication for the employment or avoidance of one or other of these powerful therapeutic agents. The following attempt to formulate these indications falls very far short of complete precision, but it may serve as a guide for further study :—

RULES CONCERNING THE USE OF ESERINE AND ATROPINE IN GLAUCOMA.

1. Eserine is not to be regarded as a specific remedy for increased tension in general ; but as a means of combating the particular displacement of the iris (see Fig. 2, page 80), which, in a large class of cases, is the immediate cause of the excess of tension.

2. Atropine is to be regarded as inadmissible only in those cases in which dilatation of the pupil is likely to intensify the effect of the above-named displacement of the iris.

Primary Glaucoma.

3. In primary glaucoma, and particularly in its early stages, atropine and all other dilators of the pupil are to be studiously avoided.

4. Every case of primary glaucoma should be treated in the first instance tentatively with eserine ; the eye should be re-examined within 24 hours, and, if the case

be acute and severe, within a much shorter time, in order that operation may be at once undertaken if the tension remain unrelieved.

5. When eserine produces a full contraction of the pupil, it usually produces a reduction of tension and an improvement of vision, and, in exceptional cases, it effects a cure.

6. Eserine is usually to be regarded rather as a means of giving temporary relief and of placing the eye in a condition favorable for operation, than as a means of cure. Even when its beneficial action is most complete the glaucoma is likely to recur and to become confirmed unless arrested by a timely iridectomy.

7. It is chiefly in very recent sub-acute, or acute attacks that benefit from eserine is to be hoped for.

8. In simple chronic glaucoma contraction of the pupil by eserine may be associated with some reduction of tension, but it is unlikely that the benefit will be great or lasting. If operation be declined, or be deemed inexpedient, the pupil should be kept permanently contracted by eserine, so far as this can be done without causing irritation, in order, if possible, to retard the progress of the disease.

9. The strength of the preparation employed, and the frequency of its application, should, in all cases, be the minimum which is sufficient to contract the pupil and to keep it contracted. A solution stronger than 2 grains to the ounce of water is probably never desirable, and in many cases a much weaker solution is to be preferred. The gelatine discs of Savory & Moore are a very convenient and trustworthy form of application.

10. When eserine proves powerless to contract the pupil it will not reduce the tension, or do good in any way, but, on the contrary, is likely to do harm by promoting hyperæmia, and should not be used further.

11. The period most favourable for operation is that during which the pupil still responds to eserine, but,

in recent cases especially, iridectomy may still prove effectual after contractility of the pupil is lost.

12. As a preliminary and as a sequel to sclerotomy contraction of the pupil by eserine is almost a *sine qua non*. As a preliminary to iridectomy it is advantageous in so far as it reduces the tension of the eye, but it has the disadvantage of increasing the hæmorrhage from the iris. After iridectomy, while the anterior chamber is still empty or only partially reformed, eserine is apt to promote the formation of posterior synechia, and has been known to induce a fresh glaucomatous attack;* atropine, on the other hand, is certainly sometimes beneficial. Further evidence as to this point is wanted.

13. In those cases in which a condition closely resembling primary glaucoma is lighted up by an *intra-ocular hæmorrhage*, eserine must be used with great caution. It sometimes relieves, but it has been known to excite fresh hæmorrhage.

Secondary Glaucoma.

14. In secondary glaucoma associated with *posterior or anterior synechia*, eserine is likely to do harm rather than good; atropine may be useful in subduing inflammation, and is likely, if it influence the tension at all, to influence it beneficially. The same rule holds good for serous iritis, and, probably, for some other ill-defined inflammatory states in which the anterior chamber is deep rather than shallow.

15. Glaucoma following *needle operations on the lens* might possibly, in the absence of iritis, be relieved, for the moment, by eserine; but eserine is contra-indicated by the danger of setting up iritis; the speedy removal of the swollen lens is the rational treatment.

16. Glaucoma due to the presence of the *lens in the anterior chamber* is likely to be aggravated by eserine; if,

* Pflueger.—Augenlinik der Universität Bern. Bericht über das Jahr 1880, p. 44.

when there is no excess of tension, eserine be employed in order to facilitate the removal of the dislocated lens by operation, it should be applied only a short time before the operation is performed, lest it should induce a glaucomatous attack in the interval.

W. R. GOWERS, (London.) **A manual and atlas of medical ophthalmoscopy.** Second edition. (*London: J. & A. Churchill, 1882.*)

The first edition of this excellent work is well known to our readers. The second contains many additions, amounting to more than thirty pages of the text, and each section of the subject matter is brought fully up to the present date. Several additional illustrations have been introduced, and records of twelve more cases have been added to the appendix. Like its predecessor, the volume bears evidence, on every page, of very thorough original work, and of comprehensive literary research.

The author's views as to the probable nature of the connection between encephalic disease and optic neuritis remain practically unchanged. After consideration of the whole of the evidence hitherto obtained, the hypothesis that the mechanism is a reflex vasomotor influence is rejected, as being one which has no support from the known facts,—it presupposes a special reflex relation not known to exist, and the production of inflammation in a manner equally unknown. Further, it is shown that neither an increase of intra-cranial pressure, nor the distension of the nerve sheath by fluid, is sufficient, of itself, to excite inflammation in the papilla, but that either of these conditions may perhaps intensify a papillitis otherwise set up. The theory recently advanced by Leber, viz., that the fluid in the sheath excites neuritis by conveying pathogenic material to the optic nerve behind the eye, is not supported by any anatomical evidence that papillitis is an extension of inflammation from the periphery of the nerve at the anterior extremity of the sheath. With regard to the strangulation or choking of the blood vessels of the disc which

is undoubtedly present in many cases, Gowers shows that it is produced, not by the action of the sclerotic ring as supposed by von Graefe, but by the compression set up by the inflammatory products in the substance of the papilla—that it is, therefore, a consequence and not a cause of the neuritis. Gowers appears to incline strongly to the view, first maintained by Galezowski, that papillitis is the visible manifestation of an inflammation propagated by continuity from the brain. In cases of meningitis, evidence of descending inflammation is almost always discoverable, while in cerebral tumour it is very frequently so,—in not one case examined by Gowers, could the nerves be said to be in a perfectly normal state; and there is evidence to show that a very slight amount of descending change may lead to an intense papillitis. In accordance with the foregoing, the attempt to make a pathological distinction between “neuritis” and “choked disc” must be abandoned.

To the long list of cerebral and general diseases in which ophthalmoscopic changes have been met with the following are now added:—Labio-glossal Paralysis; Hæmorrhagic Pachymeningitis (hæmatoma of the dura mater); Insolation and Heatstroke; Quinine Poisoning. The facts relating to the last named condition have been fully stated in the Ophthalmic Review, (December 1881, page 32.)

Among the new diagrams are several interesting charts, showing the defects in the visual field which are produced by various forms of optic-nerve atrophy.

Everyone who includes the examination of the retina among his means of diagnosing disease, whether he be physician, surgeon, or ophthalmic specialist, will welcome the new edition of Dr. Gowers' book.

H. PAGENSTECHER. (Wiesbaden.) **The extraction of cataract in the unopened capsule.** (*Wiesbaden: C. W. Kreidel, 1877.*)

The extraction of cataract in its capsule, with a report of 117 recent cases. Translated by J. A. Spalding. (*Archives of Ophthalmology, Vol. X., 11., 1881, p. 152.*)

Extraction of the lens in its capsule was systematically adopted as a cataract operation by Alexander Pagenstecher at

Wiesbaden in the year 1864. Since that time, and since the publication of the first of the two articles named above, several modifications have been arrived at both as regards the indications for, and the manner of executing, the operation. The principle has found but few supporters in this country, and yet there is reason to believe that in certain classes of cases the method affords a better prospect of success than any other. Through the courtesy of Dr. Hermann Pagenstecher we are able, in this notice of the subject, to give an accurate and authorised epitome of the practical conclusions at which he has at the present time arrived.

I. Extraction in the capsule is applicable to certain classes of cataract only. Speaking generally, and from an anatomical standpoint, it is applicable only when the strength of the capsule is relatively greater than that of the suspensory ligament. The following are the forms in which this essential condition obtains:—

a. All cataracts which are already over-mature, and shrunken to a greater or less extent.

b. All cataracts which have resulted from chronic iridochoroiditis, and especially those which are complicated with capsular cataract so-called. Any points of synechia must be liberated previously.

c. All Morgagnian cataracts.

d. All dislocated cataracts.

e. The majority of those cataracts which are associated with anterior synechia of long duration.

f. Extraction in the capsule is also to be attempted whenever, through any mischance, such as a faulty incision, or compression of the eye, vitreous escapes before the capsule has been incised.

II. The forms of cataract in which this mode of extraction is contraindicated, or in which, at least, it offers a smaller prospect of success are:—

a. All cataracts which have matured rapidly.

b. All cataracts in which the presence of a considerable quantity of soft disintegrated cortical matter is discoverable, especially if the patient be relatively young—40 to 60 years

of age. Thus the majority of diabetic cataracts are unsuited to this method.

III. The foregoing classification will afford general rules by which to determine in any particular case whether the extraction in the capsule should be undertaken or not. To these, the following special indications may be added :—

When the opacity of the cortex exhibits a well-marked radiating wheel-like arrangement, or when it shines like mother-of-pearl, extraction in the capsule should, as a rule, be rejected. When, on the other hand the cortical substance presents a uniform or cloudy-looking opacity of a grayish-yellow colour, and when, at the same time, it transpires that the cataract has matured slowly or has already existed for some years, the operation in question may always be undertaken.

It may be stated generally that the greater the age of the patient the more suitable is the case for extraction in the capsule. In doubtful cases the behaviour of the vitreous, after the completion of the incision and the iridectomy, may often decide the question. Thus, if the vitreous pressure manifests itself in unusual degree after the escape of the aqueous, so that the lens is driven forward against, or nearly against, the cornea, then, unless there be any special indications for it, extraction in the capsule should not be attempted.

IV. In carrying out the operation, Pagenstecher employs strict antiseptic precautions. The evening before the operation, the patient's face having been well washed with soap, a compress, wetted with 2 per cent. carbolic-acid solution, is applied for half-an-hour; this is repeated for half-an-hour before the operation. The condition of the lachrymal apparatus, the conjunctiva, and the lids is carefully inspected. The instruments are scrupulously cleansed in alcohol. The operation is performed under 2 per cent. carbolic steam-spray. Anæsthetics are not used. Atropine is unnecessary.

A linear incision is made at the upper sclero-corneal junction so as to involve a conjunctival flap; a large iridectomy follows; incarceration of the iris, if it occurs, is carefully reduced; Pagenstecher's spoon (by Weiss & Son) is introduced steeply at first until it has passed the margin of the lens, then

quickly advanced on the flat, and the lens is withdrawn in its capsule, its separation being aided by the assistant who strokes and presses upon the cornea with the vulcanite spoon. It is necessary for the operator to rotate the eye strongly downwards during the extraction, the fixation forceps being applied below the cornea exactly opposite to the middle of the incision. It is sometimes unnecessary to introduce the spoon far into the eye, for as soon as it passes behind the margin of the lens, the latter, aided by pressure at the lower border of the cornea, readily escapes, the spoon acting rather as an inclined plane to guide the movement of the lens, than as a traction-instrument. In some cases, merely a slight pressure, without introduction of the spoon, suffices to detach and expel the lens in its capsule. When the capsule has been already opened, its removal together with the lens can never be hoped for.

V. Loss of vitreous occurs more frequently than in the operation of extraction without the capsule, but is not to be regarded as a disaster when antiseptic precautions are employed. The antiseptic dressings at present employed by Pagenstecher are made in one-half of his cases with a $\frac{1}{2}$ per cent. salicylic-acid solution and 5 per cent. salicylised cotton wool, and in the other half with pure cotton-wool saturated with 10 per cent. carbolic oil. No essential difference in the healing process has at present been observed under the two methods.

If the characters of the cataract be carefully diagnosed, and the operation be correctly performed, the percentage of cases in which the capsule ruptures during the operation, and a portion of it together with some cortical substance remains in the eye, is extremely small. The subsequent course of such exceptional cases does not differ from that which follows loss of vitreous in the ordinary operation in which the capsule is intentionally opened.

VI. The results obtained by this method having regard, to the process of healing, to the acuity of vision recovered, and to the permanence of the cure, have been excellent. The losses which have occurred have been due in nearly all cases to suppuration induced by infection from without, and, since the introduction of antiseptic measures, have been

reduced to a minimum arising from causes not connected with the nature of the operation, *e. g.*, a knock on the eye, a fall, delirium, &c.

The advantages claimed for it are :—

1. A perfectly clear pupil is obtained.
2. Iritis, especially plastic and recurrent iritis with all its consequences, is never observed.
3. Vision once restored is not liable to subsequent deterioration by secondary opacity of the capsule, and secondary operations are not required.
4. A greater proportion of perfect vision is obtained than by any other method.
5. Hæmorrhages, especially recurrent hæmorrhages are much less frequently observed.
6. Dazzling, due partly to slight irritation of the iris, partly to diffusion by the remaining capsule, is less frequent during recovery, and never occurs at a later stage.

E. FUCHS, (Luettich.) On opacity of the cornea in Glaucoma. (*Von Graefe's Archiv.* xxvii. 3, p. 66.)

The cloudiness of the media observable during glaucomatous attacks was formerly attributed to turbidity of the vitreous or aqueous humours; it is now known to depend on changes in the cornea, but its precise nature has hitherto remained doubtful.

Clinically the corneal change appears as a general haziness and a loss of polish, more pronounced at the centre than at the margin. It is distinguished from all forms of inflammatory opacity by the fact of its appearing and disappearing in some cases within the space of a very few hours, in correspondence with the occurrence and subsidence of glaucomatous tension. It much resembles the corneal opacity which is seen when the freshly excised eye of an animal is firmly compressed between the finger and thumb, and has been supposed to be essentially the same as this, but the supposition is incorrect, for while the artificially produced opacity subsides instantly upon the relaxation of the pressure and does not involve any discoverable

tissue-changes, the true glaucoma-opacity requires a definite, though short, time for its disappearance, and is associated with well marked tissue-changes.

Fuchs shows that the actual change is an œdema of the cornea caused by the increased pressure within the eye. Leber has demonstrated that under normal conditions there is no perceptible escape of the aqueous fluid through the cornea, but the experiments of Knies and Weiss with chemical reagents prove, nevertheless, that the cornea is not absolutely impervious and that fluid from the anterior chamber does percolate it in extremely small amount even to the anterior epithelium.

When the internal pressure rises this percolation is increased.

The fluid collects between the layers of the corneal tissue, especially those nearest to the anterior limiting membrane, creating numerous narrow slit-like interspaces between the interlacing fibres; it causes a well marked distension of the minute canals through which the nerve filaments perforate Bowman's membrane to gain the anterior epithelium; and having passed through these canals it collects near their anterior ends, beneath and in the epithelial layers. In many cases the epithelium is raised from the subjacent membrane in the form of minute vesicles or blisters by the fluid collected beneath it, and occasionally a new structureless membrane is formed between Bowman's membrane and the epithelium by the coagulation of a layer of the infiltrated fluid. In cases of long standing, in addition to the accumulation of fluid, minute round cellular bodies are found beneath the epithelium and in the dilated nerve canals.

The loss of transparency which accompanies the œdematous infiltration into the corneal parenchyma is due to the different refracting powers of the corneal layers and of the interposed films of fluid, the refraction of the former being higher than that of the latter.

The diminution and loss of corneal sensibility which occur during glaucomatous attacks are due, Fuchs believes, to the maceration and compression which the nerve-filaments undergo through the action of the fluid which is forced into the nerve-canals in Bowman's membrane, and to the rupture which they

suffer when the epithelium is separated and raised from its surface.

Fuchs gives some good drawings of the microscopic appearances described in his paper.

P. S. ABRAHAM and J. B. STORY (Dublin). Micrococci in sympathetic ophthalmia. *Dublin Journal of Medical Science, February, 1882, p. 152.*

At a recent meeting of the Pathological Society of Dublin Mr. Abraham exhibited some living micro-organisms removed from an eyeball which had set up sympathetic ophthalmitis. The eye had been excised by Mr. Story a few hours previously. A small portion of the sheath of the optic nerve and of the subjacent tissue—*i.e.*, of the wall of the perineural lymph-space—was teased out in normal salt solution, and on the slide thus prepared were found large, moving, micrococci-like bodies. On puncturing the eyeball the vitreous fluid was found to be of a sherry colour, and to contain numerous blood-corpuscles, red and colourless, besides a profusion of roundish and oval micrococci moving briskly, and varying much in size. Some were large—one-fifth of the diameter of a blood-corpuscle—others very much smaller. The smaller ones were often arranged in rows of two, three, or four, with sometimes one standing out from the side of the row. A colourless blood-corpuscle crossing the field was covered with rugosities apparently consisting of micrococci.

This observation lends support to Leber's latest theory concerning the nature of sympathetic ophthalmitis. (*Vide Ophthalmic Review, November, 1881, p. 7.*)

TH. LEBER, (Goettingen). Nuclear opacity of the lens following injury of the capsule, with remarks on the causation of stationary nuclear and lamellar cataract. (*Von Graefe's Archiv, xxvi., 1880, p. 283.*)

The following observation is recorded as evidence in favour of Horner's explanation of lamellar cataract.

From the eye of a large rabbit a circular piece of the anterior lens-capsule, 3 mm. in diameter, was removed in order to study the healing process of a capsular wound. The eye was examined nearly a year later. The lens, as a whole, appeared rather shrunken. The centre of the anterior capsule was occupied by a thick cicatrix 2 mm. in diameter, by the contraction of which the adjacent healthy capsule was thrown into slight radiating folds. Beneath the capsule was a perfectly transparent and healthy layer of lens substance $\frac{3}{4}$ to 1 mm. in thickness; within this, and readily separable from it, was a compact cataractous nucleus. The transparent layer completely surrounded the opaque nuclear portion, except anteriorly where it was perforated by a dense opaque plug connecting the capsular cicatrix with the opaque nucleus.

Leber interprets the conditions as follows:—The shrunken opaque portion represents what was, at the time of the injury, the whole lens; it was rendered cataractous by the formation of an aperture in the capsule. After absorption of a certain quantity of swollen and protruding lens matter (seen as the immediate result of the operation), the aperture was closed by the formation of a cicatrix. Later, the animal being still young, fresh transparent cortical layers were laid down by the ordinary mode of growth; these were necessarily incomplete at the anterior pole of the lens, because here the capsular cicatrix adhered to the cataractous portion.

Horner's theory concerning the cause of lamellar cataract is capable of being taken in two ways. It may be that the layers of fibres which remain permanently cataractous are imperfect *in their original formation*, in consequence of the temporary disturbance of nutrition with which this form of cataract is believed to be connected; or it may be that they are rendered cataractous by this same cause *after their healthy formation is completed*. Leber inclines to the latter supposition. Assuming that the temporary mal-nutrition takes effect upon the lens matter which is already formed, and renders it opaque more or less deeply, according to the length of time during which it acts, we can explain, not only the lamellar form of cataract, but also those complete and stationary nuclear forms which arise apparently under similar conditions. The fact that in the

observation cited above, the opacity involved not a layer only of the rabbit's lens, but the whole nucleus, strengthens this view of the question.

J. C. RENTON, (Glasgow.) The treatment of sloughy ulceration of the ornea. (*Edin. Med. Jour.*, September, 1881.)

This paper sets forth no new lines of treatment, but it deserves notice as containing a strong advocacy of Saemisch's method of incising the cornea for the relief of dangerous ulceration—an operation which with some English surgeons stands in small esteem.

Speaking of preventive treatment Renton says:—"In all cases of wounds, abscess, or ulceration of the cornea, however slight, and wherever there is any doubt as to the depth of the irritation present, let two indications be carried out—1. The instillation of atropine. 2. A protective bandage." But, further on, he speaks of eserine, though apparently not from experience, as though it were interchangeable at pleasure with atropine. "Both are advised from one reason, viz., in order to put the eye in a state of physiological rest, either by dilating or contracting the pupil. They never do harm, and invariably do good." This is a dangerous doctrine. The use of eserine in corneal ulceration is certainly a matter for nice discrimination not for routine practice; the effect is surely an increase of physiological activity, an excitation of vascular action, rather than the reverse; hence the advantage gained in some cases, and the danger of adding to the pain and irritation in others.

RECENT LITERATURE.

A. RETINA. OPTIC NERVE. CENTRES.

- ABADIE. Sur le traitement du décollement de la rétine par la galvano-puncture.
Progrès méd. Nr. 49.
- BAUDRY, S. Simple note sur l'emploi du prisme pour provoquer la diplopie monoculaire.
Lille, 1881.
- BECKER. Ueber heterochrome Photometrie.
Bericht über d. XIII. Versamml. d. Ophth. Ges. p. 167.
- BERLIN, R. Ein Fall von Verletzung des Sehnerven bei Fractur des Canalis opticus.
Bericht über d. XIII. Versamml. d. Ophth. Ges. p. 81.
- CARRERAS-ARAGÓ. El daltonismo y las alteraciones visuales en los empleados ferro-carriles.
Revista de ciencias médicas 1881. Oct. 10. Barcelona.
- COHN, H. Neue Prüfungen des Farbensinnes mit pseudoisochromatischen Tafeln.
Centralbl. f. prakt. Augenh. Dec. 1881.
- DAGUENET. Rétinite traumatique.
Recueil d'ophtalmol. 3^{me} année Nr. 12. p. 722.
- DRESCHFELD, J. Pathological contributions on the course of the optic nerve fibres in the brain.
Brain, Jan., 1882, p. 543.
- DU BOIS REYMOND, C. Ueber die Empfindungskreise in der Netzhautgrube. Inaug.-Dissert. Berlin.
- EMMERT, E. Grössenverhältnisse der Nachbilder.
Klin. Mon.-Bl. f. Augenhkde. XIX. p. 443.
- GALEZOWSKI. Migraine ophthalmique avec thrombose des vaisseaux rétinien.
Recueil d'Ophtalmol., Jan. 1882, p. 10.
- GALEZOWSKI, X. Ophthalmic megrim, an affection of the vaso-motor nerves of the retina and retinal centre, which may end in a thrombosis.
Lancet, Feb., 1882, p. 176.

- GORHAM, J. On the blending of colours by the sole agency of the sensorium.
Brain, Jan., 1882, p. 467.
- HIRSCHBERG. Amaurose nach Blutverlust.
Bericht über d. XIII. Versamml. d. Ophth. Ges. p. 69.
- KESTEVEN, W. H. Case of xanthopsis, or perverted colour vision.
Medical Times and Gazette, Feb., 1882, p. 131.
- KLEIN, S. Netzhautablösung.
Eulenburg's Real-Encyclopädie d. ges. Heilkde. Bd. IX. p. 531.
- KLEIN, S. Netzhauterschütterung.
Eulenburg's Real-Encyclopädie d. ges. Heilkde. Bd. IX. p. 544.
- KNAPP, H. Ueber Chinin-Amaurose.
Bericht über d. XIII. Versamml. d. Ophth. Ges. p. 100.
- KOLBE. Ueber die zweckmässigsten Methoden zur Massenprüfung des Farbensinnes.
Centralblatt f. prakt. Augenh. Dec. 1881.
- KRAUSE. Ueber das Verhalten der Ciliarnerven nach der Neurotomia optico-ciliaris.
Bericht über d. XIII. Versamml. d. Ophth. Ges. p. 172.
- KUHNT. a. Ueber die physiologische Sehnervenexcavation.
b. Ueber den Bau der Fovea centralis des Menschen.
Bericht über d. XIII. Versamml. d. Ophth. Ges. p. 138 and 141.
- KUEMMELL. Ueber Dehnung des Nervus opticus. (Aus dem Allgemeinen Krankenhaus in Hamburg.)
Deutsche med. Wochensch. Nr. I. 1882.
- LEGG, J. WICKHAM. Report on hæmophilia, with a note on the hereditary descent of colour blindness.
St. Barth. Hosp. Reports, vol. 17, 1881, p. 303.
- MACE & NICATI. Recherches sur la comparaison photométrique des diverses parties d'un même spectre.
Ann. de Chimie et de Physique 5. Série. XXIV.
- MICKLE, W. J. Localization of the visual centres of the cerebral cortex—case.
Medical Times and Gazette, Jan., 1882, p. 89.
- MOORE, N. Tumour (and microscopic section) of optic tract from a case of diabetes insipidus.
Path. Soc. Trans., vol. 32, 1881, p. 5.
- ROBERTS, C. Colour-blindness as a racial character.
Lancet, Jan. 1882, p. 124.

SAUNDERS, A. R. Case of optic disturbance, probably from intracranial tumour.

British Medical Journal, Jan., 1882, p. 116.

SCHUBERT. Zur Casuistik der Retinitis syphilitica.

Centralbl. f. prakt. Augenh. November, 1881.

VINCENTIIS, C. DE. Contribuzione alla enervazione del bulbo.

Giorn. delle scienze mediche. Anno III. fasc. 8. p. 844.

ZEHENDER. Nachträgliche Bemerkungen zu dem Artikel von

E. Emmert über Grössenverhältnisse der Nachbilder.

Klin. Mon.-Bl. f. Augen. XIX. p. 451.

Colour Blindness.

British Medical Journal, Jan., 1882, p. 99.

Mechanical excitation of the optic nerve.

Lancet, Feb., 1882, p. 197.

B. UVEAL TRACT. VITREOUS AND AQUEOUS. LENS.

ABADIE. De l'indication de l'iridectomie et de la sclérotomie dans le glaucome.

Bullet. génér. de théér. CI. 9.

BERGER, E. Bemerkungen ueber die Linsenkapsel.

Centralbl. f. prakt. Augenh., Jan. 1882, p. 2.

DANESI, G. La sclero-coroidite.

Bolletino d'oculistica.

DENISSENKO, G. Ueber den Bau und die Bedeutung der Choroidealdrüse im Auge einiger Fischarten.

Allgem. Wiener med. Zeitung. Nr. 49. 1881.

FÖRSTER. Ueber künstliche Reifung des Staars. Korelysis. Eröffnung der Kapsel mit Pincette.

Bericht über d. XIII. Versamml. d. Ophth. Ges. p. 133.

GALEZOWSKI. Des cataractes traumatiques.

Recueil d'ophtalmol 1881, p. 705. & 1882, p. 17.

GIRAUD-TEULON. Electrothérapie dans le traitement des opacités du corps vitré.

Bull. de l'acad. de méd. Nr. 42.

GIRAUD-TEULON. Electro-therapy in opacity of the vitreous body.

Medical Press and Circular. Nov. 9, 1881.

GOLDZIEHER. 1. Chorioiditis plastica nach Schuss-Verletzungen.

2. Knochenbildung im Umkreise der Linse,

Bericht. über d. XIII. Versamml. d. Ophth. Ges. p. 153 and 155.

- HORSTMANN. Ueber recidivirende Iritis.
Bericht über d. XIII. Versamml. d. Ophth. Ges. p. 8.
- HOSCH. Primäres Sarcom der Iris.
Centralbl. f. prakt. Augenh., Dec. 1881.
- HOSCH. Ein Fall von Gumma des Ciliarkörpers.
Centralbl. f. prakt. Augenheilk., Dec. 1881.
- JANY. Zur Lehre von der diabetischen Katarakt und der Operation derselben.
Deutsche med. Wochenschr. Nr. 49. p. 665.
- MICHEL. Ueber die normalen histologischen Verhältnisse und die pathologisch-anatomischen Veränderungen des Iris-Gewebes.
Bericht über d. XIII. Versamml. d. Ophth. Ges. p. 106.
- RHEINDORF. Ein Fall von Glaucom mit acuter Linsentrübung.
Klin. Mon.-Bl., Jan. 1882, p. 15.
- SCHAEFER. Ein Fall von congenitalem, einseitigem Schichtstaar.
Klin. Mon.-Bl. f. Augenhkde. XIX. p. 455.
- SCHIRMER, R. Mydriasis und Myosis.
Eulenb. Real-Encyclopädie d. ges. Heilkde. Bd. IX. p. 359.
- VINTSCHGAU, M. v. Zeitbestimmungen der Bewegungen der eigenen Iris.
Arch. f. d. ges. Physiol. Bd. 26, p. 324.

C. CORNEA. CONJUNCTIVA. SCLERA.

- BECKER. Ueber die traumatischen Continuitäts-Trennungen der Bulbushäute. Inaug.-Dissert. Bonn 1881.
- CREDE. Zur Verhütung der Augenentzündung der Neugeborenen.
Arch. f. Gynäkologie. XVIII. 3.
- DENISENKO, G. Ueber die äussere Körnerschicht der Aalretina und über Hornhautödem bei Morbus Brightii.
Bericht über d. XIII. Versamml. d. Ophth. Ges. p. 151.
- FONTAN, JULES. Des adénopapillomes de la conjonctive.
Recueil d'ophtalmol. 3^{me} année. Nr. 12. p. 724.
- FUCHS. Ueber glaukomatöse Hornhauttrübung.
Bericht über d. XIII. Versamml. a. Ophth. Ges. p. 73.

MANDELSTAMM. Ein Fall von Fistula Corneae.

Centralbl. f. prakt. Augenh., Jan. 1882, p. 11.

SATTLER. Ueber die Natur des Trachoms und einiger anderer Bindehautkrankheiten.

Bericht. über d. XIII. Versamml. d. Ophth. Ges. p. 18.

WICHERKIEWICZ. Einige Betrachtungen ueber sogenannte Bulbuswarzen.

Centralbl. f. prakt. Augenh., Jan. 1882, p. 13.

D. REFRACTION. ACCOMMODATION. MOTOR APPARATUS

BEEVOR, C. E. On Conjugate lateral deviation of the eyes directly after epileptic fits.

British Medical Journal, Jan. 1882, p. 85.

RANDALL, B. A. Hypermetropia in the public School children.

Medical News, Feb. 1882, p. 144.

E. EYELIDS. LACHRYMAL APPARATUS. ORBIT.

ARMAIGNAC. Considerations sur l'étiologie et la thérapeutique des affections des voies lacrymales (suite).

Revue d'oculist. du sud-ouest. Nr. 14. p. 313.

BERGER. Ectropion considérable de la paupière inférieure. Greffe par transplantation d'un lambeau taillé dans la peau du dos, combinée avec la blepharorrhaphie.

Revue d'oculist. du sud-ouest. Nr. 14. p. 324.

CAUDRON, VIRGILE. Ectropion cicatriciel. Greffe hétéroplastique. Guérison.

Revue d'oculist. du sud-ouest. Nr. 14. p. 322.

MEYER. Epithéliome de l'angle interne de l'oeil gauche : ablation. Greffe dermique. Guérison.

Revue d'oculist. du sud-ouest. Nr. 14. p. 320.

PORTER, W. H. Reticulated round cell sarcoma of the orbit with secondary growths internally, containing melanotic deposits.

N. Y. Medical Record, Jan. 1882, p. 104.

REID. Epithelioma of upper eyelid.

British Medical Journal, Feb. 1882, p. 160.

F. MISCELLANEOUS.

- ABADIE. Du vertige oculaire.
Progrès méd. Nr. 53. 1881.
- ABRAHAM & STORY. Micrococci in Sympathetic Ophthalmia.
Dublin Medical Journal, Feb. 1882, p. 152.
- ADELMANN. Geschichtliche und statistische Rückblicke auf die Augenlinik der Universität Dorpat.
Arch. f. Geschichte der Medicin u. med. Geogr. Bd. IV. p. 88.
- ARLT. 1. Ankyloblepharon. 2. Spontane Berstung der vorderen Kapsel einer cataractösen Linse.
Bericht über die 13 Versammlung d. Ophth. Gesellschaft. Heidelberg. p. 126 and 130.
- BERRY, G. A. Subjective symptoms in eye diseases.
Edin. Med. Journal, Feb., 1882, p. 673.
- BRETTAUER. Zur lokalen Anwendung des Jodoform.
Bericht über d. XIII. Versamml. d. Ophth. Ges. p. 3.
- CARTER, R. B. Eyesight. An Address delivered at the Brighton Health Congress of 1881. (continued).
Practitioner, Feb. 1882, p. 134.
- CHAUFFARD. Cas de cécité et de surdité cérébrales avec blépharoptose droite incomplète.
Revue de méd. 1881. November.
- COHN, H. Ueber fünf Extractionen von Cysticerken aus dem Augapfel.
Breslauer ärztl. Zeitschr. Nr. 23. u. 24.
- DESPAGNET, F. Clinique ophthalmologique du Dr. Galezowski.
Recueil d'ophthalmol. 3^{me} année. Nr. 12. p. 737.
- FERE, CH. Mouvements de la pupille et propriétés du prisme dans les hallucinations provoquées des hystériques.
Progrès méd. Nr. 53. 1881.
- GIOVANARDI. Un caso di anoftalmia doppia congenita. Mancanza dei nervi ottici. Atrofia dei lobi occipitali.
Revista spec. di frenatria e di med. leg. VII. 3.
- GUNNING, W. M. Werden mit der Expirationsluft Bacterien aus dem Körper entführt?
Klin. Mon.—Bl. January, 1882, p. 1.
- HAMECHER. Ueber künstliche Augen aus Celluloid.
Bericht über d. XIII. Versamml. d. Ophth. Ges. p. 147.
- HIRSCHBERG. Demonstrations-Mikroskope.
Bericht über d. XIII. Versamml. d. Ophth. Ges. p. 165.

- HOCK. Die kleinen chirurgischen Handgriffe in der Augenheilkunde.
Wiener Klinik. Jahrg. VII. Heft 11.
- JANY, L. Ueber Einwanderung des *Cysticercus cellulosæ* in's menschliche Auge. Eine Entgegnung an Prof. H. Cohn.
Breslan, 1882.
- KUHNT. Ueber einige Altersveränderungen im menschlichen Auge
Bericht über d. XIII. Versamml. d. Ophth. Ges. p. 38.
- LEWKOWITSCH. 1. Zwei Faellen von interstitieller Keratitis.
2. Congenitales partielles symblepharon.
Klin. Mon.-Bl., Jan. 1882, p. 12 & 14.
- LOPEZ-OCANA. Un tercer caso de pseudo-hemorragia ocular.
Revista de ciencias médicas 1881. Oct. 10. Barcelona.
- MANDELSTAMM. Verletzung beider Augen durch eine Pistolenkugel.
Centralbl. f. prakt. Augenh., Jan. 1882, p. 9.
- MENGIN. Observations cliniques. Plaie contuse de la région ciliaire, &c., décollement de toute la moitié intérieure de la rétine; guérison complète en deux mois.—Corps étranger de la choroïde; cataracte traumatique; guérison.—Phénomène subjectif produit par un astigmatisme myopique composé.
Recueil d'Ophthalm. Jan. 1882, p. 1.
- NEALE, R. Hot water in diseases of the eye.
Medical Times and Gazette, Jan., 1882, p. 109.
- OELLER. Ein Holzsplitter.
Centralbl. f. prakt. Augenh., Jan. 1882, p. 18.
- PFLUEGER. Augenklinik der Universität Bern.
Bericht über das Jahr 1880.
- RAMPOLDI. Rapporti morbosi esistenti fra l'apparato sessuale e il visivo.
Ann. universali di med. 1881. October.
- REID. Removal of foreign bodies from interior of eye, by electro-magnets.
British Medical Journal, Feb. 1882, p. 160.
- SAMELSOHN. Versuch zur Entfernung eines in den Innenraum des Augapfels eingedrungenen Eisensplitters mittelst des Electromagneten.
Berliner klin. Wochenschr. Nr. 49.
- SATTLER. Präparationsmethoden.
Bericht über d. XIII. Versamml. d. Ophth. Ges. p. 165.
- SCHIESS-GEMUSEUS. Zwei Fälle von Extraction von Fremdkörpern mittelst Electro-Magnet.
Klin. Mon.-Bl. f. Augenklde. XIX. p. 458.

- SZPILMAN & LUCHSINGER. Atropin und glatte Muskelfasern.
Arch. f. d. ges. Physiol. Bd. 26, p. 459.
- THOMPSON, W. The practical examination of railway employés as to color-blindness, acuteness of vision and hearing.
Medical News, Jan. 1882, p. 36.
- WILLIAMS, H. W. The diagnosis and treatment of the diseases of the eye.
Boston, 1881.
- WILLIAMS, R. Ophthalmic cases.
British Medical Journal, Feb. 1882, p. 157.
- Congrès médical international de Londres. Section d'ophthalmologie.
Gaz. méd. de Paris. Nr. 47 u. 48.
- New York Ophthalmological Society.
New York Medical Record, Jan. 1882, p. 84.
- Pennsylvania Railroad Company's instructions for examination of Employés as to vision, colour-blindness, and hearing.
Medical News, Jan. 1882, p. 59.
- The Glasgow Asylum for the Blind.
British Medical Journal, Feb. 1882, p. 170.
- The Blind.
Lancet, Feb., 1882, p. 242.
- Ulster Eye, Ear, and Throat Hospital.
British Medical Journal, Feb. 1882, p. 171.



EMBOLISM OF ARTERIA CENTRALIS: RE-ESTABLISHMENT OF CIRCULATION: RESTORATION OF VISION: PERMANENT CENTRAL SCOTOMA.

BY HENRY EALES,

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E. R., a female, aged 20, presented herself at the Hospital on *September 25*, 1879. She stated that while washing her face about an hour previously she had noticed that her right eye became suddenly blind, "a mist passing over the sight."

On testing the vision of the right eye I found that it had no perception of light. Ophthalmoscopic examination showed the following appearances:—Considerable œdema around the fovea, which stood out in marked relief, as is usual in embolism of the arteria centralis retinæ, also slight œdema around the disc; the retinal veins filled, but somewhat small; the trunk and branches of the retinal artery much contracted, and filled with detached columns of blood, with intervening clear spaces, this being most marked in the upper branches of the vessel.

At 3 p m. (5 hours later) I made another ophthalmoscopic examination, and I found the general appearances of œdema the same, but the retinal artery now contained a continuous unbroken column of blood. On slight pressure upon the globe, the artery on the disc collapsed between each pulse. The disc was paler than in the left eye.

The patient's general health appeared good; I could discover no cardiac valvular lesion; the urine contained the slightest trace of albumen, but no casts. These facts were kindly verified for me by Dr. Saundby.

September 26.—Ophthalmoscopic appearances much the same as yesterday, but vessels somewhat fuller. No perception of light in centre of visual field, but some perception of objects at the upper periphery.

September 27.—State of retina much the same. A vessel at upper periphery (a vein?) presents a broken blood column; œdema less. Central, inner, and lower parts of visual field quite blind, but fingers are counted at 18 inches at upper and outer periphery.

September 29.—œdema less. To-day, can perceive objects almost up to the centre of the visual field, from all parts of the periphery.

October 3.—œdema much less, none at fovea, only slight around disc. Slight pressure still causes collapse of artery on disc between each pulse. Centre of field still quite blind even to light.

October 25.—On slight pressure upon the globe, both the artery and the vein completely collapse on the disc between each pulse, becoming almost invisible threads. Right disc paler than left. Right retinal artery smaller than left.

December 10.—Scarcely any difference between the appearances of the retina and its vessels, in the two eyes, except perhaps that the right disc is a shade paler than the left. Parts around fovea in right eye appear quite normal.

June 8, 1880.—Fundus oculi shows no trace whatever of past disease in right eye. Vessels and retina look quite normal. Vision is good over greater part of the field, but there is a small central scotoma, which is absolutely blind even to light. While looking at a lamp, 10 feet distant, patient perceives no effect when a number 10 prism is placed base downwards before the right eye; when it is placed before the left eye she at once perceives the apparent displacement of the light, but does not get diplopia.

Charts of the visual field were constantly taken and always showed a central scotoma, which, however, was smaller at each succeeding examination. The periphery of the field was not contracted.

This case bears a striking resemblance to the one recorded by Dr. White in the *Ophthalmic Review* for January last. In both cases, contrary to the general rule, it was the right eye which was affected; in both the obstruction was from the first apparently incomplete, a broken blood

column being found in the retinal artery ; in both the retinal circulation was restored within a few hours from the onset, the restoration being complete in Dr. White's case, and actually witnessed by him, while in mine it was apparently only partial. In both cases the retina and its vessels recovered their normal healthy appearance, and in both recovery of sight took place, leaving, however, in Dr. White's case, a slight contraction of the upper part of the field, and in mine a central scotoma.

The rapid restoration of circulation in these cases is, I think, against the theory that the restoration was through collateral branches of anastomosis. The facts of my case may, I think, be best explained by assuming the lodgment of an embolus in the trunk of the retinal artery, causing only momentary arrest of circulation. The embolus was probably rapidly broken up by the passing blood stream, and parts of it carried into the smaller branches of the artery, a part only remaining in the trunk of the vessel and there undergoing absorption. The failure of recovery of central vision in my case was probably due to destruction of the delicate extra-vascular structures of the retina at the fovea, in consequence of prolonged interference with the normal circulation, this interference being more prolonged than that which occurred in Dr. White's case, and in similar cases previously reported.

IODOFORM IN OPHTHALMIC PRACTICE.*

BY KARL GROSSMANN,

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In the edition of Nothnagel's most valuable book on materia medica which lies before me, I find under the heading "Iodoform," after the enumeration of the

* Partly from a paper read before the Liverpool Medical Institution, 9th of February, 1882.

supposed qualities of the drug, the following remark :—
 “ This remedy seems from all experience to be entirely superfluous.” During the few years since this was written, Iodoform has been employed to such an extent in general surgery, that on the Continent at least, where it is backed by such names as von Langenbeck & Billroth, it is in everyone’s hands. Quite a literature has been created by it, and though its dangerous qualities check to a great extent its free use in general surgery, its useful properties are of such a strong and well pronounced character, that the remedy, once brought into general notice, will certainly not share the usual fate of new remedies, speedy abandonment.

The main properties of Iodoform are (CHI_3) its antiseptic and antisecretional actions, for these it has been recommended as a substitute for the carbolic dressings of Lister. Experience will have to prove how far this is admissible, but it is a fact is that Iodoform has a very strong antiseptic (antiparasitic) power.

Three years ago, Neisser¹ published a short preliminary note on investigations of blenorrhœal pus from different mucus membranes. He found in all cases of virulent catarrh of the urethra, groups of micrococci of very small size, on the nuclei or on the protoplasm of the pus-cells, and exceptionally in the fluid part of the secretion. The pus of ophthalmia neonatorum and that of gonorrhœal ophthalmia also contained cocci similar to these in size and arrangement. Neisser came to the conclusion that the virus, and, therefore, the disease itself, in these three blenorrhœal conditions are identical. These observations obtained a very strong support in two publications which appeared nearly simultaneously and independent of each other, viz., Haab’s paper on the micrococcus of blenorrhœa neonatorum², and Hirschberg and Krause’s article on the pathology of the contagious

¹ Centralbl. f.d. Med. Wiss, No. 28, 1879.

² Beiträge zur Ophthalmologie, Wiesbaden 1881, p. 159.

diseases of the eye¹. Haab completely corroborates Neisser's observations, and gives an exact description and a very good microscopic drawing of the cocci. Hirschberg and Krause give the microscopical peculiarities of the discharges of the different contagious conjunctival secretions, and only differ in so far as they often found the bacteria in the intercellular fluid. My own microscopical examinations of purulent conjunctival secretion coincide entirely with Neisser's and Haab's observations.

Iodoform having been used lately with success in urethral gonorrhœa, and being praised so much abroad as a valid antiseptic, it seemed to me to offer an appropriate treatment for gonorrhœal ophthalmia.

On the 16th of January a gentleman came to me with injection of the right conjunctiva; from the presence of a slight chemosis, and from the general aspect, I suspected that the affection was of a contagious nature, and the patient told me that the day before a little dog which had suffered lately from purulent ophthalmia, had licked his face. It was found out, on inquiry, that the dog suffered from gonorrhœa, a common affection in these animals. I ordered ice; and for disinfecting purposes diluted Condyl's fluid. Secretion scarcely noticeable.

January 17th. Right eye: Chemosis increased. Left eye, which was free yesterday, shows the same appearance as did the right yesterday. Ice and Condyl's fluid.

January 18th. Right eye: Chemosis well developed, discharge thick and abundant. On the cornea two small greyish infiltrations. Left eye: Considerable Chemosis, free discharge. Ice, Condyl's fluid.

January 19th, Right eye: Chemosis a little less severe; central infiltration changed into a small but deep ulcer. Discharge copious. Left eye: Very chemotic, cornea greyish on surface. The patient not being able any longer to bear the ice, and not deriving any visible benefit from the permanganate of potash, I dusted iodoform (which does not cause any irritation) into the everted eyelids.

¹ Centralbl. f. prakt. Augenh., Sept. 1881, p. 270.

January 20th. Chemosis decreased on both sides; no other change.

January 21st. Chemosis nearly disappeared, discharge diminished; the central ulcer less yellow, two other ulcers on the site of previous infiltrations.

From this day the patient made slow but steady progress to complete recovery within four weeks being treated with a daily application of iodoform and a very weak lotion of arg. nitr. and carbolic acid used three times a day. Four days after the beginning of the iodoform treatment the discharge was nearly gone, and it stopped entirely from the following day, but the patient suffered from *sleepiness* for a week and from photophobia for nearly three weeks longer.

In this case the microscopic examination of the secretion was carried on from the third day of the patient's appearance; plenty of accumulated groups of micrococci were found on the nuclei and protoplasm of the pus cells, very few in the fluid itself. The day after the first application of iodoform I could find no alteration but the next day nearly all the cocci had disappeared, and from the following day the discharge had so much decreased that it was difficult to get a sufficient quantity for the slide.

I have given this case fully as it is a typical one. About a fortnight later I got another private patient with double gonorrhœal ophthalmia, and a hospital patient with purulent acute double conjunctivitis, in which gonorrhœal infection was doubtful. These three patients were about 45 to 50 years of age; in all the discharge stopped after 4 to 5 days' application of iodoform.

On a larger scale I applied the remedy thus, which had proved itself so valuable, in an epidemic at a large workhouse. There, 39 children were suffering from purulent ophthalmia, and a rather long treatment with nitrate of silver had not proved very successful. At my request the resident medical officer treated these 39 cases with

iodoform; a week afterwards he reported a most conspicuous decrease of the discharge. The workhouse being at a great distance from my house, I could not obtain any microscopic examinations of the discharge. Some of these cases had corneal ulcers, which all improved quickly.

I add here the following case which prevented me from attending to the workhouse patients, and which I relate because I had an opportunity of watching it well. It concerned my own eye.

On the morning of the 15th of February, I got a little discharge into my left eye from a patient whose lid I was everting. I put a drop of a weak zinc lotion into my eye, and soon forgot all about it. On the evening of the next day, about 11 p.m., my eye began rather suddenly to become hot, and I had the feeling of some foreign body pressing under the upper lid. I everted it and found a fibrinous membrane, which I removed with great pain and difficulty. I cooled the eye with cold water, having no ice at hand. The next morning, 17th, the conjunctiva was chemotic, and there was some little discharge on the palpebral conjunctiva. I applied ice and iodoform. The chemosis and the discharge increased so much until evening, that I decided to see my colleague Mr. Priestley Smith the next day. Same application. The next morning the chemosis was entirely gone, and towards noon the discharge nearly stopped. When I reached Birmingham I was already on the way towards recovery, which went on slowly but steadily during the next two weeks. By taking great care I succeeded in keeping the right eye free from infection.

From these cases alone, I think myself entitled to recommend oculists to try iodoform in similar cases. I have since had opportunity of applying it, together with weak silver solutions, in three cases of ophthalmia neonatorum, and have had very good success.

I have also tried its antiseptic qualities in three cases of dacryoblenorrhoea, which came to me for an immediate

operation. In two I had to perform an iridectomy for optical reasons, the third case was a cataract. Though I did not feel very hopeful, and advised the patients to have their lachrymal apparatus treated first, they insisted upon immediate operation, and in all three cases I operated after a previous treatment of two days duration (by splitting the lachrymal canal, probing, and dusting the iodoform into the conjunctival sac), and in all three cases with perfect success.

From the report of the last Ophthalmological Meeting at Heidelberg, which came into my hands shortly after I had read this paper at the Liverpool Medical Institution, I see that Dr. Brettauer in Trieste has used iodoform successfully in a case of peculiar doubtful tubercular conjunctivitis, where other means, including even an operative removal of the granulations, had failed. Leber in Goettingen has used iodoform since last summer in so-called hypopyon-keratitis, but this affection being much rarer in Liverpool than in Germany I have had but small opportunity for similar experiments. Three cases which came under my care within the last two months, soon showed great improvement under the application of iodoform, and healed quicker than is usual under treatment by chlorine water.

I have tried iodoform in various other affections, including granular ophthalmia, and phlyctenular conjunctivitis, but found benefit from it only in those cases in which there was a plentiful and rather purulent discharge.

From the experience gained within the last few months, I consider iodoform a most valuable remedy for ophthalmic practice. Its application is easy, and with a little care disagreeable effects may easily be avoided. In general surgery the poisonous qualities of a remedy which contains about 97 % of iodine may be a very important bar to its general and free use; in ophthalmic practice no toxic symptom has been noticed so far. The best

way to apply it is, I think, to dust it on to the conjunctiva of the everted lids, like we do calomel. The powder must be *very fine*; this can be obtained only by a *very careful* pulverisation. Very much, I think, depends on this quality. I felt in my own eye how the sharp points of the larger crystals hurt a sensitive conjunctiva, and how by mere mechanical irritation they might protract the healing, and even bring on an increased discharge.

A very good illustration of this fact was given by the children in the workhouse. A week after the iodoform had been applied to them, I got my attack of purulent conjunctivitis, and was prevented for nearly three weeks from going to see them. When I went there again, the resident surgeon who had instructed the nurse to apply the dust, told me that after a favourable treatment of about three weeks, all at once the powder seemed to disagree with all the children. The powder hurt them and they began to rub their eyes causing redness and discharge. I asked for the glass in which the powder was kept, and found that all the thin powder had been used, and only the big crystalline grains were left; this, no doubt, had caused the mechanical irritation. A renewed application of a finer powder was borne perfectly well, and followed by good success.

From similar experience Dr. Carl, of Frankfurt*, points out the possibility of small abscesses resulting from the sharp edges of the crystals.

The most objectionable quality of iodoform, the bad smell, can best be overcome by putting a few Tonca beans into the bottle which contains the powder. This, I find, is the best and the cleanest way to scent it. Camphor also does very well. Tannic acid has been recommended by Verneuil, Trélat and others, but is not well suited to the conjunctiva. The smell of the scented powder is not at all disagreeable; in two of my cases, however, the iodoform seemed to produce sleepiness.

* Report of the 13th Ophth Meeting at Heidelberg, 1881.

To sum up the indications for the application of this drug in ophthalmic practice.

Iodoform seems to be of the greatest value in purulent conjunctivitis, both of simple or virulent nature. I think that even those cases in which infection has taken place and is already developed to its full height, may be checked by it.

Iodoform may take, in ophthalmic surgery, the place of Lister's antiseptic dressing in general surgery. We have, up to the present day, no other antiseptic remedy which is easily applied and fit for general use. Iodoform is very easily applied; its very slow and slight solubility makes it probable that a small quantity is sufficient for 24 hours, and thus we may leave the bandage on the operated eye for 24 hours, or even longer, without removing it. If we accept the opinion of Leber and of Horner as given at the last International Congress and as proved by experiments, viz.:—that in all cases of suppuration after cataract operation, the cause of the suppuration is an immigration of pus from the conjunctival sac into the corneal wound and thence into the interior of the eye, we must adopt some antiseptic method which is able to prevent the loss of an eye by suppuration, and which is at the same time easy enough to be employed by every operator.

R. DEUTSCHMANN, (Goettingen). *Physiological chemistry of the intraocular fluids.* (*Von Graefe's Archiv.* xxvii., 11, p. 295).

Deutschmann finds that the discrepant results obtained by different investigators concerning the amount of albumen in the aqueous and vitreous fluid are explained by the fact that the proportion of albumen in both fluids rapidly increases after death. A fresh series of very careful experiments, in which contamination of the fluid at the moment of its removal was strictly guarded against, gave the following results for the eye of the calf:—

Aqueous fluid.

Perfectly fresh ... a trace of albumen, (imponderable)

5 hours after death 0.031 per cent. „

9 „ „ 0.074 „ „

Fluid from vitreous body.

Perfectly fresh ... 0.03 per cent. of albumen.

6 hours after death ... 0.088 „ „ „

9 „ „ „ ... 0.089 „ „ „

The percentage in the vitreous fluid is therefore naturally higher than that in the aqueous. The increase in the aqueous after death comes, doubtless, firstly from the vitreous, later probably from the lens as well. The increase in the vitreous after death comes, probably, firstly from the retina, and later from the lens also.

R. DEUTSCHMANN, (Goettingen). On the source of the aqueous humour. (*Von Graefe's Archiv*, XXVI, iii., p. 117.)

Clinical observations have fully established the fact that the secretion of the aqueous humour depends but little, if at all, upon the iris; the iris may be totally absent without any reduction of the normal contents of the anterior chamber or of the general fulness of the globe.

On the other hand Deutschmann has proved by experiment that the removal of the ciliary processes, together with the iris, is followed by a total arrest of the secretion of the aqueous fluid, and by atrophy of the vitreous body and lens.

In the eye of the rabbit the ciliary processes occupy an advanced position on the posterior surface of the iris. It is possible, under chloroform, to remove the whole of the iris and processes through a small corneal incision without loss of lens or vitreous, and without causing inflammatory disorganization of the eye. The eye remains free from irritation, it is freely opened, and there is no increased secretion or swelling of the eyelids.

The cornea at first becomes vascular and opaque, but rapidly clears again and recovers its transparency at the end of about

14 days. The anterior chamber is completely emptied of fluid, and remains permanently abolished; the vitreous atrophies and totally disappears; the lens swells and becomes cataractous; the retina atrophies; the globe contracts in all diameters and remains extremely soft. In this condition the eye continues for months without a trace of inflammation.

By this experiment Deutschmann has confirmed the view previously suggested by others, that the ciliary processes are the source of the aqueous humour, and of the fluid which nourishes the vitreous body. The atrophy of the retina makes it probable that the nutrition of this membrane is in part dependent on the vitreous.

TARTUFERI & ALBERTOTTI, (Turin). On variations in refraction after evacuation of the aqueous humour.
(*Annali di Ottalmologia*, 1881, Fasc. III.)

The authors record the results of a series of experiments undertaken to determine the value of R in partial and total evacuation of the aqueous. The eyes experimented upon were,

almost emmetropic (H = less than 0.75 D)

hypermetropic (H = 2.25 D)

myopic (M = -13.D)

and aphakous.

Care was taken to place all the patients under the same conditions during examination. They were placed with their backs to a north light and tested by Snellen's and Monoyer's types. The anterior chamber was tapped with a narrow curved knife, a modification of Guérin's tenotome, and complete evacuation of the aqueous was insured by keeping the lips of the wound open by a small probe.

In the emmetropic eyes R increased, after complete evacuation, 2.25 D; after incomplete evacuation, from 3 to 10 minutes afterwards, 0.85 D.

In the hypermetropic eyes, 2 minutes after complete evacuation, R increased 3.25 D.

In the myopic eyes R increased, after complete evacuation 5 D, after incomplete evacuation 2 D.

In aphakous eyes R diminished after complete evacuation 1.5 D, after incomplete evacuation 0.7 D.

From the results of their experiments the authors deduce :

1. That R increases in eyes possessing a lens and diminishes in eyes in which the lens is wanting:
2. That the variation of its value is proportionate to the quantity of aqueous evacuated.
3. That the greatest increase of R is noticed (as Prof. Reymond had already observed) in myopic eyes which are ordinarily believed to have a more ample anterior chamber than other eyes.
4. That in eyes of different conformation, not aphakous, R increases on average, after complete evacuation, 3.5 D.

The causes of these variations the authors believe to be :—

1. Flattening or increase of the radius of curvature of the cornea. This they deduce from the diminution of the value of R in aphakous eyes.
2. Displacement forward of the lens, and thus correlative advance of its cardinal points.

The authors further observed—1. As Reymond had previously done, that after evacuation of the aqueous the faculty of accommodation still existed. 2. That the aqueous, at least in the cases under their observation, was reproduced in a shorter time when the eye was atropinized. 3. That after the evacuation spasm of the accommodation is some times produced, as the result of which R assumes a value greater even than that which it had at the first observation after complete evacuation.

Lloyd Owen.

SCHIESS-GEMUSEUS (Basle). Traumatic myopia; gradual spontaneous recovery. (*Klinische Monatsblätter für Augenheilkunde*, October, 1881, p. 386.)

A myopia of more than 4 dioptries was brought about in this case, as in the experimental cases noticed in the foregoing abstract, by an advance of the lens ; if the interpretation given be correct, the advance of the lens was due, not to an artificial escape of the aqueous humour, but to a forcible stretching and relaxation of the suspensory ligament, accompanied by a partial arrest of the secretory function of the ciliary processes.

A man received a violent blow from a cork on his right eye, which had previously had good vision; vision was temporarily abolished; it returned next day but remained very imperfect for distant objects, and things appeared smaller to this eye than to the other. When first seen, three weeks after the accident, the conditions were:—*Injured eye*, no irritation; pupil dilated (atropine had been used); anterior chamber shallow; minus tension; media clear; fundus normal; $M = 4.25\text{ D}$; $V = \frac{3}{8}$; *sound eye*, E ; $V = 1$. Three weeks later M had increased to 4.75 D , the pupil was active but slightly irregular, the tension was remarkably low, and the anterior chamber was extremely shallow; V remained as before. The free use of atropine produced no change of refraction. A return to the normal state appeared to the patient to begin about five months after the accident; when examined four months later than this the eye was found to have normal tension, normal pupil, normal anterior chamber, and a myopia of only 0.75 D .

Thus the return of the lens to its normal position was accompanied by a decrease of refraction equal to four dioptrics.

The advance of the lens is attributed to a stretching of the suspensory ligament beyond the limit of its elasticity, from which it ultimately but very gradually recovered. The shallowness of the anterior chamber was certainly not due to an abnormally high vitreous pressure, for the globe was remarkably soft. The loss of tension is ascribed to a diminished secretion of the aqueous humour through injury to the secreting structures—the ciliary processes; the state of the pupil afforded additional evidence of dragging and nerve disturbance in this region.

H. KNAPP (New York). Traumatic suspension of the anterior chamber; myopia; restoration of the anterior chamber; acute glaucoma, cured with eserine. (*Archives of Ophthalmology*, Vol. X., 4, 1881, p. 451.)

This case is closely allied to the one recorded by Schiess-Gemuseus (*vide* preceding abstract), but here the restitution of the chamber occurred more rapidly and glaucoma supervened. The interest of both cases lies in their pathological interpretation, and with regard to this the two observers are at variance.

A man, aged 29, received a blow with a cane on his right eye; no particular pain followed, but vision for distant objects was impaired. When examined a few days later the conditions were:—No external lesion; anterior chamber empty, iris and lens being apparently applied to cornea;

pupil small, regular, responsive to light ; lens, vitreous and fundus normal, the ophthalmoscopic picture being bright and free from distortion ; tension slightly diminished ; with $-\frac{1}{7}$ read $\frac{20}{20}$ well. Three days later, anterior chamber very shallow, but not quite so much so as before ; with $-\frac{1}{10}$ read $\frac{20}{20}$. Eight days later, anterior chamber fully restored ; iris angle as usual ; cornea clear ; iris bright and pupil like that of other eye ; vitreous hazey, and fundus veiled ; retinal veins distended, arteries pulsating ; pain over eye and side of head ; $T + 1$; V about $\frac{20}{200}$. Other eye normal in every respect. During the day the glaucoma increased in spite of the use of eserine, by which the pupil was somewhat contracted ; five leeches were applied to the temple, eserine continued, morphia given internally ; the following morning the pupil was contracted *ad maximum* and the glaucoma was gone—tension either normal or diminished. Recovery was complete and permanent ; $V = \frac{20}{20}$ without glass.

Referring to the observation of Schiess-Gemuseus, Knapp doubts the explanation given ; he urges that the symptoms in these cases resemble those which occur during the existence of a corneal fistula, and suggests that the emptiness of the anterior chamber and the loss of tension were probably due to the escape of the aqueous fluid through an undiscovered perforation of the corneo-scleral wall at the periphery of the anterior chamber. So long as the oozing continued glaucoma would not occur ; it could arise only when the aqueous was again retained as shown by the restitution of the anterior chamber ; the main outlets of the aqueous humour, Fontana's spaces, may have become more or less impervious during the pressure of the iris against them. He cannot admit that the advancement of the lens depends upon a relaxation of the zonula caused by the concussion, for "Where, in these cases," he asks, "does the aqueous humour go?" This appears hardly to be a valid objection to the theory of Schiess, for we do sometimes find the anterior chamber absolutely wanting in blind degenerated eyes which have never suffered any mechanical injury, but in which the secretion of the intraocular fluid has ceased in consequence of damage to the ciliary processes—a condition which Schiess assumes to have been the cause of the softness of the eye in his case. It is worthy of note, also, that slight contusions of the eye in animals have been observed to cause a manifest loss of tension, (*Graefse-Saemisch Handbuch*. Vol. II., p. 379.)

M. GAYET. (Lyon). Total expulsion of the iris and temporary deformation of the lens by a blow on the eye. (*Archives d'Ophthalmologie, July-August, 1881.*)

In order to account for the total disappearance of the iris which occasionally follows a violent blow on the eye some observers have been driven to assume that the iris undergoes a process of absorption. Gayet considers this hypothesis untenable, and records the following case to prove that the iris may be expelled from the eye by a contusion without tearing of the suspensory ligament or displacement of the lens:—

A woman, aged 27, fell, striking her right eye against the angle of a piece of furniture. Its vision was immediately abolished. On examination 24 hours later, the cornea was dull, and the anterior chamber viewed under strong oblique illumination appeared to be filled with blood; adjacent to the inner margin of the cornea, but separated from it by a narrow bridge of sclera was a brownish-red mass beneath the conjunctiva, resembling a melanotic tumour, and above and below this there was extensive subconjunctival extravasation of blood.

During the following few days the blood clot filling the anterior chamber contracted centripetally, retaining its connection with the periphery of the chamber only by a few fine filaments. The lens and suspensory ligament became visible, and were seen to be in their normal position and almost intact. On very oblique inspection the ciliary processes were just visible, except at one part of the circle, hardly one-tenth of the whole, opposite to the brown mass beneath the conjunctiva. The iris had totally disappeared from the chamber. On the side next to the subconjunctival mass the lens presented a marked alteration in form and refraction, as manifested by the presence of an elliptical area from which light was reflected in an abnormal manner, and through which the retinal vessels appeared distorted. Transparency was not impaired. This deformity of the lens gradually diminished, and at the end of seven weeks had entirely disappeared. Good vision was regained. The subconjunctival ecchymosis cleared up, and there remained beneath the membrane a small soft irregular black body—the extruded and shrunken iris.

Total disappearance of the iris as a result of injury is not very rare. It has been known to occur not only in cases where there has been a wound or rupture through which the lost membrane may be supposed to have escaped, but where the envelope of the eye has remained entire. Gayet gives references to a number of recorded cases. He believes that the diagnosis of an entire absence of the iris can only be made with certainty when the circle of the ciliary processes can be

seen under oblique illumination ; when the processes are thus visible the diagnosis is certain, inasmuch as the possibility of the iris being retracted and hidden behind the margin of the sclera is thereby excluded.

Close to its insertion the iris is thinner than at any other part, and is doubtless more easily torn here than elsewhere. Detachment of the insertion is met with in all degrees from a small peripheral rent to a separation involving nearly the whole circle, and it is easily conceivable that an exaggeration of the same force which produces such ruptures may detach the iris completely and drive it, together with the contents of the aqueous chamber, through a rent in the tunics. Gayet's observation proves that this may actually happen, and that it does not necessarily involve any displacement of the lens. It shows also that the lens may undergo a partial and circumscribed alteration in form,—due probably to injury of the suspensory ligament at the corresponding part of the circle—without loss of transparency, and with ultimate return to a normal condition.

In some of the cases cited in this paper as examples of total irideremia from injury, especially in those in which the envelope of the eye was not ruptured, and where no statement is made as to whether the ciliary processes were visible or not, it is easier to believe that the iris had become retracted, folded upon itself, atrophied, and hidden behind the scleral margin—a mode of disappearance which certainly does occur—than that it had really been displaced from the chamber.

A. VOSSIUS, (Giessen). The treatment of diphtheritic conjunctivitis. (*Klin. Monatsbl. für Augenheilk.*, Nov., 1881, p., 418.)

Vossius recommends the employment of salicylic acid dissolved in glycerine (4 per cent.) as a local application. A case of diphtheria of the conjunctiva associated with the same condition of the fauces was rescued by its means from an apparently hopeless state, after aqueous solutions of carbolic, salicylic, and boracic acids had been used without benefit. The glycerine solution was painted on the con-

junctival surfaces every half-hour; an immediate reduction of the swelling of the lids and the chemosis set in, and a large ulcer, which threatened total destruction of the cornea, healed.

Bose of Giessen had obtained marked success with this remedy in the treatment of diphtheria of the throat and of wounds.

H. W. WILLIAMS, (Boston, U.S.) *The diagnosis and treatment of the diseases of the eye.* *Boston: 1881.*

This is a book intended for the use of general practitioners and students, and the author has made a point of avoiding "elaborately scientific descriptions and theories," hence, although containing much that is interesting to those for whom it was written, it affords few points of interest to the specialist.

Dr. Williams is a strong advocate for the use of corneal sutures wherever he finds an opportunity of employing them. He uses them in conical cornea to unite the edges of the wound left after excising an oval flap from the apex of the cone; in his cataract operations he also frequently employs them to keep the wound edges in apposition, and he has found no drawbacks to their use in either case. He insists upon the fineness of the needles used in order to obtain good results.

His experience is strongly opposed to the practice of iridectomy as a preventive measure in cases of posterior synechiæ, but he provides no substitute for the discarded operation.

Enervation is recommended as a substitute for enucleation, and Dr. Williams defends it on the ground that the ciliary nerves, which he regards as the carriers of sympathetic inflammation, are not likely to reunite after their section. This may be true enough, but that restoration of sensibility can take place is now an admitted fact—the regeneration of the intraocular nerves was demonstrated by Krause at the ophthalmological meeting at Heidelberg last year—so that even if the irritation is propagated along the ciliary nerves there is very good reason for doubting the permanency of the good effected by their division

It is surprising to learn that Dr. Williams has not found any good results from the use of eserine in glaucoma, and that he even goes so far as to doubt whether anyone else has done so. The opinion which he expresses upon tenotomy of the external recti in insufficiency of the internal is also unfavourable; he holds that the operation is only theoretically applicable, and has not proved practically useful.

J. B. Story.

OPHTHALMOLOGICAL SOCIETY OF GREAT BRITAIN.

THURSDAY, MARCH 9th, 1882.

WILLIAM BOWMAN, F.R.S., President, in the Chair.

Atrophy of Optic Disc after Phlegmonous Erysipelas of Orbit.—Mr. Nettleship exhibited the patient. The erysipelas had occurred three months before, causing great swelling and a large slough of the upper lid; when the swelling subsided, the eye was found to be quite blind. When exhibited the eye had no perception of light, and the optic disc was very pale.

Mr. H. Power asked whether there was disease of the bone in the neighbourhood of the orbit.

The President observed that the eye itself had not suffered; probably the optic nerve was compressed by the inflammatory effusion in the orbit, and the atrophy was secondary to this pressure.

Dr. Stephen Mackenzie asked whether the atrophy had appeared to be primary or post-neuritic.

Mr. Nettleship had been able to find no evidence of disease of the bones; there had been a discharge from the nose, but this had stopped two months before the onset of the erysipelas. He had not seen the patient until too late to decide whether the atrophy was primary or post-neuritic. In a similar case in which he had been able to examine the nerve, the latter was in a state of degeneration amounting almost to necrosis; it would not stain; it seemed to have been destroyed together with other structures behind the eye.

Suppurative Panophthalmitis following Ligature of Common Carotid Artery.—Dr. Walter Edmunds detailed the case. The left common carotid was ligatured for secondary hæmorrhage, following a self-inflicted wound of the throat; a few days later the eyelids of the same side became swollen; the globe somewhat protruded; chemosis of conjunctiva, cornea steamy, aqueous muddy; pupil of moderate size, but did not dilate with atropine; with the ophthalmoscope only a faint reflex. The patient died a month after the injury with right hemiplegia. Three abscesses were found in the left side of the cerebrum, and suppuration had occurred in the left vitreous. Microscopic examination showed great inflammation in the space between the sheaths of the optic nerve, slight inflammation of the nerve itself, swelling of the retina, and some choroiditis. Three cases were on record in which an affection of the corresponding eye followed ligature of the common carotid. In one, loss of vision only was noted; in the second, complete loss of sight, which recovered in six months; in the third, there was disorganisation of the eye.

Mr. James E. Adams suggested septic embolism from the operation-wound as the probable cause of the ophthalmitis; suppurative ophthalmitis occurs in like manner with ulcerative endocarditis.

Dr Walter Edmunds believed that a deficient blood-supply to the brain might lead to cerebral abscess, and supposed it possible that the ocular suppuration might have the same cause.

Dr. Stephen Mackenzie observed that deficient blood-supply was a very unusual cause for an abscess, and suggested that the panophthalmitis was due to extension of cellulitis or thrombosis from the wound.

Choroido-Retinitis in Inherited Syphilis.—Mr. Nettleship showed a boy in whose eyes, the left especially, were large areas of exudation between the retina and choroid; they were white and uniform, with a soft edge, and were evidently recent. There were no other manifestations of hereditary syphilis, but there was a full history of syphilis in the mother during the pregnancy with the patient.

Choroidal Hæmorrhage from External Injury, without Perforation of Eyeball.—Mr. J. B. Lawford brought forward the

case; it had been under the care of Mr. Nettleship. The patient had been struck by a charge of shot on the right side of the face; for a week he could not open his eye; then he found the sight impaired. On examination, a month after the accident, the vision of the eye was imperfect; limitation of field; hazy atrophy of disc; abundant mottled hæmorrhages in yellow spot region; appearances suggesting either retinal blood-staining or blood on the choroid covered by hazy retina. The left eye was healthy. The point of interest was the source of the blood seen by the ophthalmoscope. There was reason to suppose that one or more shot had passed round the outer surface of the globe through a wound on the conjunctiva; there was nothing to show any penetration of the globe. It was possible that the shot had, after deeply grooving the sclerotic, wounded some of the posterior ciliary arteries; the extravasated blood might have found its way into the choroid along the sheaths of these arteries. Another suggestion was that the blood was effused between the sheaths of the optic nerve, and thence found its way into the retina, but the absence of blood at the optic disc and the considerable degree of sight remaining were thought to negative this.

The President observed that sometimes the force of a blow seemed to spend itself on the back of the eye, just as in cerebral concussion the maximum injury was often found at the opposite side of the brain to the side struck.

Mr. Nettleship said that there was no evidence of any direct blow on the eye, and no rupture of the choroid such as might occur from direct violence. The question was: How did the blood get into the interior of the eye? He thought, judging from an analogous case which he had examined, that there was some evidence that it might pass along the sheaths of the ciliary arteries, either anterior or posterior.

Mr. Adams Frost mentioned the case of a woman in whom the optic nerve was divided to prevent sympathetic ophthalmia from the irritation caused by a dislocated lens, the patient refusing to permit enucleation. About three weeks later blood was noticed on the anterior surface of the lens.

Double Optic Neuritis after Head-Injury. — Mr. Waren Tay narrated two cases of double optic neuritis, without im-

pairment of vision and without atrophy, following injury to the head. In the first case, after a fall on the head, there were slight symptoms of concussion, and bleeding from the left ear, with deafness on this side. During the next few days, slight ptosis and weakness of the internal rectus on the same side were noticed. On the twentieth day, well-marked neuro-retinitis was found, with appearances at each yellow spot region resembling those of embolism; sight was not affected. During the next week, the neuritis increased and then diminished. The ptosis and the weakness of the internal rectus disappeared; the deafness remained. At the end of five weeks, the ocular changes had disappeared almost entirely. At the end of three years, when last seen, the patient was well and had good sight. In the second case, after injury to the left side of the occiput from a fall, there were well marked symptoms of concussion. Subsequently, the chief symptom was headache. On the twentieth day, sight was unaffected, but well marked doublet optic neuritis was discovered; mercury was ordered. The evidences of neuritis increased for a week, and then disappeared; the headache subsided, and at the end of a month the mercury was stopped. At the end of seven weeks, vision was normal. These cases had occurred in the practice of Mr. Hutchinson. In both the neuritis was noticed while the patients were actually under care for injury to the head. Such cases were rare. Mr. Tay suggested that probably there had been meningitis setting up neuritis, and alluded to the specimens of "perineuritis optica" shown by Dr. Edmunds at a former meeting. (*Vide Ophthalmic Review*, November, 1881, p. 19.) An instance of neuritis from injury to the head had also been recorded by Professor Leber. (*Vide O. R.*, December, 1881, p. 34.)

Double Neuro-retinitis after Contusion of the Brain.—Dr. Coupland read the notes of the case. The patient was a boy aged 5 years; his symptoms all dated from a fall on the head from another boy's back three months before admission to hospital. He was unconscious for a short time after the fall, and later vomited; the next day, being attacked by convulsions followed by insensibility. Other fits followed, and his mental condition became impaired; he began to lose his sight, but at

the end of four weeks improved in other respects, until four days before admission, when vomiting and headache returned. He had lost much flesh during this period, and his intellect was quite altered. There were headache, vomiting, at times retraction of head, rigidity and flexion of legs, rapid pulse, complete amaurosis. In each eye, the disc was concealed by whitish exudation studded with bright spots (fatty degeneration?), with dwindling of retinal arteries and marked tortuosity of veins. There was no otorrhœa, and no sign of injury to the head. Two days after admission, he had a convulsion commencing in the right leg, followed by another of the same kind; intense pain in head and screaming. The vomiting was very persistent for some days, and he became very fretful. During six weeks in hospital, periods of improvement alternated with relapses of severe headache and vomiting with fits beginning in the right leg; he had also a slight attack of erysipelas of the nose, and fell into a low condition, from which he rallied; when he left the hospital, his cerebral condition seemed slightly improved, the retinal changes remaining much as before. He was readmitted on the following day, having had several "fits" since his return home, and he died comatose in a few hours. At the necropsy, there was no trace of injury to the skull. There was basic meningitis, especially about the optic commissure, and much ventricular effusion. A film of yellow pigment covered the convexity of the hemispheres, and the left inferior temporo-sphenoidal lobe was the seat of a patch of softening and hæmorrhage of old date. A softening orange-coloured clot, the size of a hazel-nut, occurred in the substance of the right hemisphere, and another smaller focus of same date between the thalamus and caudate nucleus of the same side. All these changes were attributed to the fall five months before death, and sufficed to produce the intense neuro-retinitis and atrophy, as well as the other cerebral symptoms. The result of "concussion" in this case, without fracture, substantiated the researches of Durch and statements of Duplay, the course of events being, contusion of brain with hæmorrhages into its substance as results of the concussion, followed by basic meningitis; but whether the ocular condition depended on the hæmorrhages or on the meningitis was uncertain, probably the latter.

Extensive Retinitis following Injury to the Head.—Mr. McHardy exhibited the patient, a woman aged 25, who had struck the back of her head in falling. Subsequently, she had constant headache and vomiting, and at the end of a week was obliged to take to her bed, where she remained for four weeks, after which she was admitted to hospital, complaining of failing vision and constant headache. Six weeks later vision was imperfect on both sides; headache still severe, but vomiting had ceased for two months; no marked anæmia. Ophthalmoscopic examination showed retinal changes resembling those seen in advanced renal and plumbic retinitis, but without hæmorrhages. The urine, carefully and repeatedly examined, was throughout free from albumen and sugar.

Mr. Higgins mentioned the case of a little boy who came to him for strabismus. On examining the eyes with the ophthalmoscope, well marked optic neuritis was discovered; it was then ascertained that he had fallen down an area some months before. The optic neuritis persisted for some months during the whole time he was under observation.

Mr. Adams Frost elicited that there was a high degree of hypermetropia in this case.

Dr. Stephen Mackenzie inquired whether the blood was examined in Mr. McHardy's case. In such a case, no possible condition of altered blood-state should be overlooked. With reference to Dr. Coupland's case, he pointed out the frequency with which a severe blow played a prominent part in the history of cases of tumor cerebri.

Mr. Henry Power mentioned a case of injury to the head, through a fall from a bicycle; when the swelling of eyelids which followed had subsided, great defect of one eye was discovered. There was marked pallor of the disc, which passed on into complete atrophy. He imagined there was some damage to the foramen opticum. Such damage was, it was said, followed by atrophy, and not by neuritis; and this case seemed to support that statement, for when first seen, seven days after the accident, the disc was not inflamed, but pale, so that if any neuritis ever existed, it must have been of very short duration.

Dr. Buzzard suspected, with Dr. Mackenzie, that there might be a constitutional cause in Mr. McHardy's case. Had

any sphygmographic tracings been made? In a case recently sent to him, there was said to be no albuminuria; there was, however, well marked renal retinitis, and the pulse gave a tracing of very great arterial tension. More careful examination showed that the urine did contain albumen. In other cases, though there was no albuminuria, yet there was high arterial tension.

Dr. Brailey believed the connection between brain-lesion from injury, and optic papillitis, to be meningitis; the papillitis was an extension from meningitis caused by the blow. As to the occurrence of atrophy without antecedent neuritis, there were several analogous cases; in glaucoma, for instance, atrophy might thus occur, and in tobacco-atrophy there was not at any time any conspicuous swelling of the disc.

Mr. Waren Tay replied that he had wished to draw attention to the infrequency of ophthalmoscopic changes in these cases at an early period. It was important to make sure that the changes were not of old standing; in a man suffering from concussion, he found atrophy, apparently due to the pressure of a large hæmorrhage into the orbit, but it turned out that the changes were old.

Mr. McHardy replied that there had been no examination of the blood in his case; the chlorosis arising from semi-starvation was rapidly disappearing; the "bruit du diable" was gone; and this, too, under the exhibition of mercury and iodide of potassium, while the retinitis had advanced. There was no tension of the pulse. The urine had been repeatedly and most thoroughly examined. In one case of atrophy following severe injury observed by him there was no papillitis.

Deficiency of Visual Acuteness in a Seaman.—Dr. C. E. Fitzgerald brought forward a case which illustrated the insufficiency of the present system of examining seamen. A sailor aged 25, was about to be promoted from the rank of third officer; he had served for eight years on foreign service, and had been in the employment of a home company for about three years. Colour-sense was perfect; visual acuteness very deficient in both eyes; right, fingers at 3.5 m., left, $V = \frac{6}{36}$; well-marked convergent strabismus of right eye, and a high degree of hypermetropia. No lens or combination of lenses

improved the visual acuteness of right eye; with + 4.5 D vision of left eye rose to $-\frac{6}{18}$. The ophthalmoscope revealed no changes. This man had passed the tests of the Board of Trade, although his vision was manifestly insufficient for the proper discharge of his duties as a seaman.

Dr. Brailey stated, in defence of the Board of Trade, that their examination was directed chiefly to the question of colour-blindness; in some instances, however, it seemed to be imperfect even in this particular.

Mr. Shadford Walker mentioned several cases in which he had found serious deficiency of visual acuity in seamen, some of whom held positions of great responsibility.

The President thanked Dr. Fitzgerald on behalf of the Society for having raised a very important question. It must be remembered that the very accurate tests of vision now at our disposal were of comparatively recent introduction. The officials of the Board of Trade had already been approached in this matter, and had shown willingness to receive and to act upon suggestions. The matter was not easy to deal with, as many interests were concerned, but an improved system would doubtless be introduced.



RECENT LITERATURE.

A. RETINA. OPTIC NERVE. CENTRES.

- BERLIN, R. Injuries of the optic nerve and ophthalmic artery from fracture of the optic canal.
Trans. Internat. Med. Congress. London, Vol. III. p. 115.
- BOUCHUT. De la névrite optique dans ses rapports avec les maladies intra-crâniennes.
Trans. Internat. Med. Congress. London, Vol. III. p. 58.
- BULLER, F. A case of sudden and complete loss of vision after large doses of quinine.
Trans. Amer. Ophth. Society, 1881.
- DIANOUX. Traitement des décollements de la rétine par des injections souscutanées de pilocarpine.
Trans. Internat. Med. Congress. London, Vol. III. p. 65.
- EALES. Abstract of paper on primary retinal hæmorrhage in young men.
Trans. Internat. Med. Congress. London, Vol. III. p. 51.
- EHRlich, P. Ueber provocerite Fluorescenzerscheinungen am Auge
Deutsche Med. Wochenschr. Nr. 2, 3 & 4. 1882.
- FANKHAUSER. Untersuchung der Schüler des Gymnasiums zu Burgdorf auf Farbenblindheit.
Jahresbericht über das Gymnasium in Burgdorf. 1881.
- GALEZOWSKI. Des thromboses vasculaires amenant des névrites optiques ou des signes d'embolie.
Trans. Internat. Med. Congress. London, Vol. III. p. 58.
- HIRSCHBERG, J. Ueber Amaurosen nach Blutverlust.
Zeitschrift f. klin. Medicin. IV. 1 & 2.
- JEFFRIES, B. J. A peculiar expression of the eyes of the color-blind.
Trans. Amer. Ophth. Society, 1881.
- LEBER, TH. On the connection between optic neuritis and intracranial diseases.
Trans. Internat. Med. Congress. London, Vol. III. p. 52.

LIBBRECHT. Considérations pratiques sur l'examen des employés du chemin de fer et de la marine au sujet du Daltonisme et de la vision.

Trans. Internat. Med. Congress, London, Vol. III. p.47.

MARECHAL. Un appareil pour l'appréciation de l'acuité chromatique dans un Examen sommaire du personnel de la marine et des chemins de fer.

Trans. Internat. Med. Congress. London, Vol. III. p.126.

MAYERHAUSEN. Zur Casuistik der Sehstörungen nach Schädelverletzung.

Centralbl. f. prakt. Augenh. Feb. 1882.

NOYES, H. D. The division of optic and ciliary nerves for sympathetic ophthalmia.

Med. News, Feb. 1882, p. 167.

OLE BULL. A new method of examining and numerically expressing the colour perception.

Trans. Internat. Med. Congress. London, Vol. III. p. 49.

PARINAUD. Chromoptomètre pour l'examen des employés de Chemin de fer et de Marins.

Trans. Internat. Med. Congress. London, Vol. III. p.124.

ROOSA, B. B. St. J. A case of hæmorrhage near the macula lutea, from concussion.

Trans. Amer. Ophth. Society, 1881.

SAMELSOHN. The pathological changes in retro-bulbar neuritis (Central Amblyopia).

Trans. Internat. Med. Congress. London, Vol. III. p.60.

SCHMIDT-RIMPLER. Zur empiristischen Theorie des Sehens.

Sitzungsber. d. Ges. z. Beförderung. d. ges. Naturw.

Nr. 4. Dec. 1881.

SCHMIDT-RIMPLER. Zur specifischen Reaction des Sehnerven auf mechanische Reize.

Centralbl. f. Med. Wissensch. Nr. 1. 1882.

SECONDI. Quatre cas de guérison radicale et persistante de décollement de la rétine par le traitement chirurgical.

Revue d'oculist. du sud-ouest. Nr. 15, p. 346.

STEVENS. On oculo-neural reflex irritation.

Trans. Internat. Med. Congress. London, Vol. III. p.111.

STILLING. Einige Bemerkungen über farbenprüfung.

Centralbl. f. prakt. Augenh. Feb. 1882.

WADSWORTH, O. F. Optico-ciliary neurotomy.

Trans. Amer. Ophth. Society, 1882.

WOLFE, J. R. Case of complete detachment of the retina, treated by puncture of the sclerotic.

Lancet, March, 1882, p. 252.

WORRELL, J. P. A case of marked narrowing of the field, with diminished acuity of vision, following the use of duboisia, and presumably a result of the use of that drug (with woodcuts).

Trans. Amer. Ophth. Society, 1881.

B. UVEAL TRACT. VITREOUS AND AQUEOUS. LENS.

ABADIE, C. Indications de la sclérotomie.

Transact. Internat. Med. Congress, London, vol. III. p. 99.

AGNEW AND WEBSTER. A report of some cases of glaucoma, in which an iridectomy on one eye seemed to precipitate an attack of acute glaucoma in the other.

Medical News, Feb., 1882, *p.* 202.

ANGELUCCI. On the etiology of glaucoma.

Trans. Internat. Med. Congress, London, vol. III. p. 86.

BADER. Sclerotomy in Glaucoma.

Trans. Internat. Med. Congress, London, vol. III. p. 98.

BENSON, A. H. On Coloboma of the choroid, and of the optic nerve sheath.

Dublin Medical Journal, March, 1882, *p.* 177 and 226.

BRAILEY, W. A. On the pathology of sympathetic ophthalmitis.

Trans. Internat. Med. Congress, London, vol. III. p. 35.

DANESI. La sclero-corioidite.

Bolletino. IV., 5 Jan. 1882.

DENK. Eine Beobachtung bei ringförmigem und theilweisem Abschlusse der Pupille.

Centralbl. f. prakt. Augenh. Feb. 1882.

DERBY, H. One hundred cases of cataract extraction, with a single failure ; with a discussion of the advantages of non-æsthesia in the operation.

Trans. Amer. Ophth. Society, 1881.

FANO. Sur l'influence que la choroïde exerce sur l'acuité de la vision. (Acad. des sciences. Séance 12 Décbr.)

Gaz. Méd. de Paris. Nr. 52.

Compt. rend. d. sciences de l'acad. Nr. 23.

FÖRSTER. Ueber einige Verbesserungen bei der Operation des grauen Staares.

Breslauer ärztl. Zeitschrift. Nr. 24.

- GIRAUD-TEULON. Electrothérapie dans le traitement des opacités du corps vitré. (Acad. des sciences. Séance 18 Oct. 1881.)
Arch. génér. de Méd. Dec.
- GOUVEA, HILARIO DE. Case of aniridia congenita of both eyes, with deficiency of the ciliary bodies, and anterior part of the choroid.
Trans. Internat. Med. Congress, London, vol. III. p.120.
- GREEN, J. An operation for closed pupil, with anterior synechia, using the *pince-ciseaux* of Wecker.
Trans. Amer. Ophth. Society, 1881.
- HOWE, L. On a method of opening closed pupil after operation for cataract.
Trans. Internat. Med. Congress, London, vol. III. p.127.
- KIPP, C. J. Two cases of sarcoma of the choroid, presenting unusual clinical features.
Trans. Amer. Ophth. Society, 1881.
- KNAPP, H. On the extraction of cataract. Clinical remarks made before the class of students at the New York Ophthalmic and Aural Institute.
New York Medical Record, Feb. 18, 1882, p. 169.
- KNAPP, H. Extraction of cataract by peripheral division of the capsule.
Trans. Internat. Med. Congress, London, vol. III. p. 89.
- LAQUEUR. Increase of refraction in glaucoma.
Transact. Internat. Med. Congress, London, vol. III. p.83.
- LITTLE, W. S. A case of persistent hyaloid artery (with chromo-lithograph drawing).
Trans. Amer. Ophth. Society, 1881.
- LUNDY, C. J. Acute glaucoma cured by eserine.
New York Medical Record, Feb. 18, 1882, p 193.
- MOLLIERE. De l'énucléation de l'œil dans la panophtalmie suppurative aiguë.
Trans. Internat. Med. Congress, London, vol. III. p.122.
- MORIGGIA. Die Bewegungen der Iris und ihr Mechanismus unter mannigfachen Bedingungen und bei verschiedenen thierarten, besonders Kaninchen und Ziegen, auf dem Wege der durch Atropin bewirkten Mydriasis, sowie der Reizung und Durchschneidung des Sympathicus untersucht.
Moleschott's Untersuchungen &c., XIII, 1. Giessen 1882.
- NOYES, H. D. The so-called cure of cataract by electricity.
Trans. Amer. Ophth. Society, 1881.
- PONCET. Comment l'ophtalmie sympathique peut-elle se produire après l'encervation ?
Trans. Internat. Med. Congress, London, vol. III. p. 39.

- REYMOND, C. The antiseptic method in cataract extraction.
Trans. Internat. Med. Congress, London, vol. III. p. 14
- SCHOELER. Zur Sklerotomie, ein Beitrag gegen die Filtrationsfähigkeit der Skleralnarben.
Trans. Internat. Med. Congress, London, vol. III. p. 100.
- SCHRÖDER, C. Ueber eine neue Methode der Kapselspaltung bei der Operation des Alterstaars.
Berl. klin. Wochenschr. Nr. 2 & 3, 1882.
- SMITH, PRIESTLY. The pathology of glaucoma.
Trans. Internat. Med. Congress, London, vol. III. p. 84.
- SNELLEN, H. Sympathetic Ophthalmitis, the mode of its transmission and its nature.
Trans. Internat. Med. Congress, London, vol. III. p. 31.
- THEOBALD, S. Report of a case in which useful vision was maintained through a number of years by the aid of a totally dislocated lens.
Trans. Amer. Ophth. Society, 1881.
- WATSON, S. Sequel to a case of eyeball tension.
Lancet, March, 1882, p. 351.
- WEBER, A. Ueber pathologische Veränderungen, welche dem Glaucom vorhergehen oder dasselbe verursachen.
Trans. Internat. Med. Congress, London, vol. III. p. 75.
- WECKER, L. DE Des opérations contre le glaucome dans ses formes différentes.
Trans. Internat. Med. Congress, London, vol. III. p. 95.
- WOLFE, J. R. Clinical lecture on a case of tubercle of the iris and ciliary body.
British Medical Journal, March, 1882, p. 299.

C. CORNEA. CONJUNCTIVA. SCLERA.

- BENSON, A. H. Ciliary staphyloma.
Brit. Med. Jour., Feb. 1882, p. 271.
- CREDE. Die Verhütung der Augenentzündung der Neugeborenen. (Aus der geburtshüfl. Klinik zu Leipzig.)
Arch. f. Gynäkol. Bd. XVIII. p. 367.
- DUFOUR. Transplantation des muqueuses sur l'oeil.
Trans. Internat. Med. Congress. London, Vol. III. p. 116.
- HIRSCHBERG, J. On tuberculous inflammations of the eyeball.
Trans. Internat. Med. Congress. London, Vol. III. p. 117.

- KNAPP, H. On croup of the conjunctiva, with remarks on contagious forms of conjunctival inflammation.
Med. News, Feb., 1882, p. 166.
- LAVALLEE. De la cautérisation ignée en thérapeutique oculaire.
Progrès. méd. Nr. 50. 10 Dec. 1881.
- MAYERHAUSEN. Zur Entfernung von Fremdkörpern aus der Hornhaut.
Centralbl. f. prakt. Augenh. Feb. 1882.
- PERRIN. Sur une forme de conjonctivite purulente rhumatismale. (Acad. de médecine, Séance du 17 Janv. 1882.)
Progrès méd. Nr. 3, 1882, p. 47.
- PREISS, O. Die Lymphbahnen der Membrana Descemetii und ihr Zusammenhang mit der Hornhaut. Zugleich ein Beitrag zur Kenntniss der anastomosirenden Hornhautzellen (Virchow) und ihrer Mündungen an der Endothelfläche.
Virchow's Archiv. Bd. 87, p. 158.
- WOLFF, W. Die Nerven der Cornea.
Arch. f. mikroskop. Anat. Bd. XX. p. 373.

D. REFRACTION. ACCOMMODATION. MOTOR APPARATUS.

- ABADIE, CH. Ténotomie partielle des muscles de l'oeil pour combattre l'insuffisance musculaire.
Trans. Internat. Med. Congress. London, Vol. III. p. 29.
- HARLAN, G. C. Congenital paralysis of both abducens and both facial nerves.
Trans. Amer. Ophth. Society, 1881.
- HARLAN, G. C. Intermittent concomitant convergent strabismus.
Trans. Amer. Ophth. Society, 1881.
- LANDOLT, E. Des mouvements des yeux à l'état normal et à l'état pathologique.
Trans. Internat. Med. Congress. London, Vol. III. p. 25.
- LORING, E. G. Hypermetropia in the public schools.
Med. News, Feb. 1882, p. 223.
- NIEDEN. Ueber Pathogenese und Aetiologie des Nystagmus der Bergleute, nach Untersuchungen von 7500 Bergleuten.
Trans. Internat. Med. Congress. London, Vol. III. p. 69.
- RISLEY, S. D. A new trial-glass frame (with woodcuts).
Trans. Amer. Ophth. Society, 1881.

SCHÖLER. Ein Refractions-Opthalmoskop zur Bestimmung aller Formen von Ametropie einschliesslich des Astigmatismus.

Arch. f. Anat. u. Physiol. Physiol. Abth. Heft. 6. p. 574.

UNTERHARNSCHIEDT. Ueber incomplete Oculomotoriuslähmung und accommodativen Linsenastigmatismus.

Klin. Mon. Bl. Feb. 1882, p. 37.

E. EYELIDS. LACHRYMAL APPARATUS. ORBIT.

ARMAIGNAC. Considérations sur l'étiologie et la thérapeutique des affections des voies lacrymales. 2° de la tumeur lacrymale (suite) 3°. Phlegmon du sac lacrymal et fistule lacrymale.

Revue d'oculist. du sud-ouest. Nr. 15, p. 337.

BERGER. De l'observation du réflexe palpébral dans l'anesthésie chloroformique. (Acad. des sciences. Séance 5 Déc.)

Gaz. méd. de Paris. Nr. 51.

Compt. rend. de l'acad. d. sciences Nr. 23.

BULL, C. S. Syphilitic diseases of the Lachrymal apparatus.

Med. News, Feb., 1882, p. 164.

BULL, C. S. The treatment of scars of the face involving the eyelids, directly or indirectly.

DUYSE VAN. Relation entre le kyste séreux sous-palpebral et l'orbite avec microphthalmos et le coloboma de l'oeil.

Trans. Internat. Med. Congress. London, Vol. III. p. 114.

FINNY, J. M. Phthiriasis palpebrarum.

Dub. Med. Jour., March, 1882, p. 201.

HIRSCHBERG, J. Eine Krankenvorstellung. Phthiriasis ciliarum.

Berl. klin. Wochenschr. Nr. 1. 1882.

IMRE. Ein seltener Fall von Osteom der Orbita.

Centralbl. f. prakt. Augenh. Feb. 1882.

NOYES, H. D. Pulsating exophthalmos.

Trans. Amer. Ophth. Society, 1881.

NOYES, H. D. Modification of Snellen's forceps for entropion operations.

Trans. Amer. Ophth. Society, 1881.

PAGENSTEGHER, H. Ein neues Verfahren zur Heilung der Ptosis.

Trans. Internat. Med. Congress. London, Vol. III. p. 108.

SCHELL, H. S. A pulsating tumor of the orbit.

Trans. Amer. Ophth. Society, 1881.

VERNIER. De la blepharite ciliaire. Thèses de Paris. Décembre 1881.

F. MISCELLANEOUS.

ABADIE, CH. Du vertige oculaire. *Progrès méd.* Nr. 1. 1882. p. 3.

ABADIE. Leçons de clinique ophthalmologique. Vol. 1 Paris, 1881.

AGNEW, C. R. Communicable eye disease, and some of its relations to blindness and pauperism.

Med. News, Feb., 1882, p. 166.

CALMETTES, R. De l'ophthalmoscopie dans les maladies de l'oreille.

Progrès méd. Nr. 3, 1882. p. 44.

COURSSEURANT. Note sur un ophthalmoscope à deux observateurs.

Revue d'oculist, du sud-ouest. Nr. 15, p. 351.

EMMERT, E. Ueber die Häufigkeit gewisser Krankheiten des Auges zu verschiedenen Zeiten des Jahres.

Trans. Internat. Med. Congress. London, Vol. III. p. 19.

GREEN, J. On some therapeutical applications of pilocarpine.

Trans. Amer. Ophth. Society, 1881.

GUAITA. Della microfotografia applicata all'anatomia patologica oculare.

Annali di Ottalm. Anno X. Fase. 6.

HORNER. Die antiseptische Chirurgie bei Augenkrankheiten.

Trans. Internat. Med. Congress. London, Vol. III. p. 8.

JAVAL. L'Eclairage électrique au point de vue de l'hygiène de la vue.

Progrès méd. Nr. 51. 17 Dec. 1881.

JAVAL ET SCHIOETZ. Un ophthalmomètre.

Trans. Internat. Med. Congress. London, Vol. III. p. 30.

JEFFRIES, JOY. Observations on a Peculiar Expression of the Eyes of the Colour-blind.

Trans. Internat. Med. Congress. London, Vol. III. p. 121.

LANDESBERG. Zur Kenntniss der Jaborandi-und Pilocarpinbehandlung in Augenkrankheiten.

Klin. Mon.-Bl. Feb. 1882, p. 48.

LEBER, TH. Ueber die Wirkung von Fremdkörpern im Innern des Auges.

Trans. Internat. Med. Congress. London, Vol. III. p. 15.

- LORING, F. B. A source of danger in the frame of the eye-glass as commonly manufactured.
Trans. Amer. Ophth. Society, 1881.
- MACE DE LEPINAY ET NICATI. Recherches sur la comparaison photométriques des diverses parties d'un même spectre.
Annales de Clin. et de Phys. 1881. XXIV. Série 5.
- MARTIN. Nouvelles applications du fer rouge en chirurgie oculaire et de quelques modifications apportées aux galvano-cautères.
Trans. Internat. Med. Congress. London, Vol. III. p. 110.
- NICOLINI. Cecità immediata permanente unilaterale successiva a trauma diretto sul bulbo.
Annali di Ottalm. Anno X. Fasc. 6.
- NORRIS, W. F. On the administration of anæsthetics in Bright's disease of the kidneys, and on some cases of sudden death after cataract operations.
Trans. Amer. Ophth. Society, 1881.
- RAVA. Pallino da caccia perduto nell'orbita dopo avere traforato da parte a parte il bulbo, &c.
Annali di Ottalm. Anno X. Fasc. 6.
- RISLEY, S. D. The comparative value of the mydriatics.
Trans. Amer. Ophth. Society, 1881.
- RISLEY, S. D. Weak eyes in the public schools of Philadelphia. The report of the committee on examination of the eyes of the children in the public schools of Philadelphia.
Trans. of Med. Soc. of State of Pennsylvania, 1881.
- SCHENKL. Zur Association der Worte mit Farben.
Prager Med. Wochenschr. Nr. 48, 1881.
- SORMANNI. Dati statistici relativi alla distribuzione della miopia e della cecità in Italia.
Annali di Ottalm. Anno X. Fasc. 6.
- STEVENS, G. T. Description of a registering perimeter.
Trans. Internat. Med. Congress, London. Vol. III, p. 123.
- STOER. Uebersichtliche Zusammenstellung der im Jahre 1880 behandelten Augenkrankheiten. Regensburg 1881.
- STREATFIELD, J. F. Observations on some congenital diseases of the eye.
Lancet, Feb., 1882, p. 263, 303.
- Control of defective sight on land and sea.
Boston Med. and Surg. Jour., Feb., 1882, p. 114.
- Dritter Bericht der Augen-Heilanstalt für den Regierungsbezirk Aachen. 1882.
- Glasgow Eye Infirmary.
Lancet, March, 1882, p. 375.

Neunzehnter Jahresbericht der Steffan'schen Augenheilanstalt.
Frankfurt a. M. 1881.

Report of Proceedings of the Italian Ophthalmological Association Meeting in Rome, September, 1881.

Annali di Ottalm. Anno X. Fasc. 6.

Resolutions as to "Test of sight suitable to be enforced in the case of signallers and look-out men, and other persons by land and sea ; with suggestions as to international arrangements for a uniform system of maritime, coast, and harbour signalling, with a view to the safety of life and property."

Trans. Internat. Med. Congress. London, Vol. III. p. 72.



ON A PRACTICAL TEST FOR THE LIGHT SENSE.

BY GEORGE A. BERRY, M.B.

The physiology of the light sense, although not as favourite a study as that of the senses of colour and form, has nevertheless, and more especially recently, received a not inconsiderable share of attention.

The difficulties of the problems which have to be solved are sufficiently great to give rise to differences in the results obtained by different investigators, which are, apparently at least, by no means slight.* It is on this account perhaps that the pathology of the subject is still so largely undeveloped; and yet if there be any points in the pathology of the light sense of real interest and importance, as there undoubtedly are, we might expect to arrive at them practically, and empirically without waiting for the actual determination of the conditions which give rise to physiological variation or even a definite physiological basis from which to start a comparison. We cannot expect the conditions of a pathological experiment to be subject in all respects to the rules which obtain in physiology, any more than we are able to regulate the conditions of a physiological experiment with the degree of accuracy which we can command in physics. We have in the extensive use of Jæger's test-types an instance of how valuable an empirical basis for the testing of the form sense has become. We might have waited long before a physiological standard based on

* *cf.* Dobrowolsky and Gaine. *Pflüger's Archiv.* (Vol. xii. p. 432).

Schadow. *Ibid.* (Vol. xix. p. 439).

Charpentier. *Archives d'Ophthalmologie.* (Vol. i. p. 48).

Ole Bull. *Archiv. f. Oph.* (Vol. xxvii. s. 54).

the smallest visual angle could have given rise to a practical test. Snellen's types owe their usefulness greatly to the wide limits it was found necessary to give to such a basis for practical purposes.

Förster* seems to have been the first to pay much attention to the variation of the light sense under pathological conditions. He devised an instrument for the measurement of the smallest amount of light necessary to render an object visible. In this instrument to which he gave the name of *Lichtsinnmesser*, the illumination is effected by a variable amount of a surface of uniform brightness. Thus taking 2 square millimetres as the amount of illuminating surface which would suffice with normal acuity of the light sense, and after five minutes rest in the dark to permit of the adaptation of the retina, if 200 sq. m. are necessary in a given case, the light sense (L) is taken to be $\frac{1}{100}$ of the normal. Förster's *Lichtsinnmesser* is pretty well known, at least in Germany; it has however the disadvantage of having to be used in the dark, and of taking up a considerable time for the examination. Probably the relative values of L. obtained by it are not very correct, but this is not of much importance, as the main point is of course to have a test which will give results suitable for comparison. In a paper on syphilitic choroiditis,† he gives a number of cases which show in a tabular form the diminution in acuity of form light sense. A glance at the table is sufficient to show to what extent the light acuity may vary for the same values of V. (or at all events for differences which do not appear by the ordinary methods of testing). Of the symptoms in syphilitic choroiditis, Förster remarks—"a further symptom of remarkable constancy, is a diminution in the sensitiveness of the retina to light of feeble intensity—hemeralopia. This

* Zehender. (1871, p. 337).

† *Archiv. f. Ophth.* (Vol. xx., 1., p. 33).

manifests itself frequently in ordinary daylight in that only the larger types (viii-xiv) are recognisable, if not distinctly illuminated from the window, whilst by the the brighter light from the vicinity of the window No. II. is still legible. Still more marked is the symptom on further diminution of the light. Thus many patients are unable with the affected eye to distinguish the hand at the distance of a foot, in a light by which the healthy eye can still with some effort decipher No. III.' That this very decided diminution in the light sense is not due in any great measure to opacities of the vitreous is clearly proved.* But there are other diseases besides syphilitic choroiditis in which it is interesting and instructive to ascertain the condition of the light sense, such are optic atrophy, glaucoma, functional amblyopia, &c. Two great groups can at once be distinguished as Förster has pointed out, viz.: those cases in which the light and form senses are proportionately deficient, and those in which the light sense is greatly more lowered than the sense of form. The first group appears to include the cases in which the nervous elements of the retina are primarily and solely affected, whilst an abnormal condition of the percipient elements, rods and cones and pigment is the probable cause of the second.

So far my own observations completely bear out those of Förster, but two other conditions are met with—firstly, cases in which the form sense is diminished without any corresponding alteration in the light sense, and secondly, cases in which the form sense remains normal, whilst the light sense suffers.† How far these two conditions may be independent or form transition stages to one of Förster's groups I am not prepared to say. On this point I must reserve an opinion until I have had further opportunities of testing. My object in the present communication is

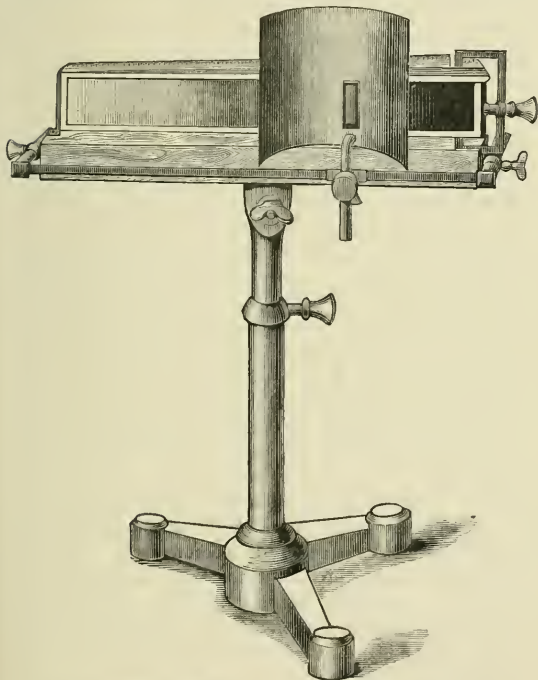
* Vid. p. xlvii., et. seq. loc. cit.

† Possibly the light sense may give the clue to the diagnosis between essential atrophy and atrophy of central origin.

to point out a practical means of quickly arriving at some knowledge of the state of the light sense. I do not pretend that the instrument I am about to describe is better adapted for the purpose than other forms which could be imagined, and which would no doubt suggest themselves to any one working at this subject. It is defective physiologically in that it does not altogether avoid the difficulty of *adaptation*, and further in not discriminating properly between, a diminution of the light sense proper, and a diminution of the power of distinguishing between different intensities of light, which condition I have elsewhere given reasons for supposing to be occasionally a distinct pathological phenomena. On the other hand it is easy of manipulation, takes up very little time, can be used in daylight, and furnishes data which admit of comparison.

The apparatus consists of a hollow prism, 40 Cm. in length and 40 m.m. in breadth at its base, mounted on a stand so as to be capable of being used in any position which may be found most convenient, (*see Figure*). The prism is filled with finely divided Indian ink suspended in water, to which a little glycerine and carbolic acid is added, which renders the suspension more complete and permanent, and prevents clotting or decomposition. The mixture is chosen of such a density that on looking through the thickest end of the prism on a bright day the normal visual acuity is reduced to $\frac{20}{200}$, or thereabouts. As the particles are liable to settle somewhat after a time the contents must be shaken every now and then, and if at any time it is necessary to change the fluid, the same density may easily be got by a single photometric test with a standard candle. A black screen, with a slit $\frac{1}{2}$ inch in width, is moveable in front of the prism, opposite any portion of which the slit may be placed. Along the top of the prism is a scale marking in millimètres the thickness of the fluid. One centimetre in length corresponds to an alteration of 1 m.m. in thickness. In

using this apparatus no one particular thickness of the light absorbing medium is taken as the normal point of departure, but the screen is *at every examination* placed so that the slit is opposite a portion sufficiently dense to



allow the *smallest amount of light* to pass with which the observer retains his full vision. The reading is taken for this position (from the edge of the slit opposite the thinnest part of the prism.) The visual acuity of the patient is then taken for the same position and noted ; if

it is below the acuity obtained by the ordinary examination in a good light, the screen is moved along towards the apex of the prism to the position which just admits of his full vision. These two positions then give the vision with an amount of light just sufficient for the attainment of full vision by the normal eye, and allow of a comparison between that amount and that which is just necessary for the greatest acuity of the patient's vision, and the results are noted as in the following example L (20 : 26), $V \left(\frac{20}{40} : \frac{20}{70} \right)$, i.e., whilst, with an absorption of light equal to that which is caused by a depth of 26 m.m. of the fluid, the normal vision retains its full acuity, that of the patient is reduced from $\frac{20}{40}$ to $\frac{20}{70}$, any greater absorption than through 20 m.m. causing a diminution. It will be readily understood that 20 : 26 does not represent the proportionate values of the light sense in the two cases, as while the thickness of the absorbing medium increases in arithmetical progression the intensity diminishes in geometrical progression.* By ascertaining the coefficient of absorption of the medium, and calculating the intensity for different thicknesses by the formula in note A, we should obtain by using a uniform light a more accurate relation; but as I have already insisted all that is necessary for practical purposes is a notation which will give comparative results of sufficient trustworthiness as to constancy. It is best to use the so-called illiterate test type of Snellen for this examination, as there is no difference between the different figures in point of visibility, and we avoid in this way the guessing which is apt to be resorted to where the ordinary letters of the alphabet are used.

In a recent paper on limitation of the field of vision† I urged strongly the importance of testing with a diminished light as a "sort of compromise between the examination of the light and form senses which is of

* See note A.

† *Lon. Med. Journal.* (1882, Feb.)

considerable practical importance." But there is a better method by which the necessity of a dark room and artificial light is obviated, and at the same time a more correct appreciation of the influence of the light sense on the acuity of peripheral vision obtained. This was suggested by a perusal of Bull's paper,* and consists simply in using grey test squares instead of white. Having ascertained for one's own eye from a number of greys of different intensity, the darkest which is seen as far to the outer side of the field of vision as a white square of the same size, the relative boundaries for the same two squares is tested in the case of the patient.†

The principle by which, as it seems to me, we should be guided in all subjective examinations is not to recognise any arbitrary standard resulting from physiological experiment, but at the time of our examination, and subjecting ourselves to the same conditions under which we propose to test our patient to start from the standard obtained by the test in our own case, provided always, it need hardly be said, that we have good reason to place confidence in the normality of our own senses; then, further, to allow a margin for idiosyncrasy and the fallacies and difficulties necessarily associated with the nature of the examinations.

Note A.—On the assumption that each infinitely small portion dt of the whole thickness t , proportionately diminishes the intensity of light i ; passing through it and taking k for the constant of absorption of the medium we get.

$$di = -k i dt$$

$$\therefore dt = -\frac{1}{k} \frac{di}{i}$$

integrating,

$$t + c = -\frac{1}{k} \log_e i$$

with the condition that when $t = 0$, $i = i_0$ we get,

$$0 + C = -\frac{1}{k} \log_e i_0$$

which determines C .

* Loc. cit.

† See note B.

$$\begin{aligned}\therefore t &= -\frac{1}{k} \log_e \frac{i}{i_0} \\ &= \frac{1}{k} \log_e \frac{i_0}{i}\end{aligned}$$

and $\frac{i}{i_0} = e^{-kt}$.

By determining by experiment $\frac{i}{i_0}$ we calculate k .

The intensity for any thickness t is then $i = i_0 e^{-kt}$, and the amount of absorption is $i_0 (1 - e^{-kt})$.

Note B.—I have not yet had opportunities of proceeding any further in this direction of examination, but it is obvious that following the same course as has been explained for direct vision, we might next proceed to discover the darkest shade, whose boundaries in the case of the patient coincided with white, and then estimate, as is easily done, the difference in intensity of the two shades of grey. In this way we should get an analogous formula.

$$L. \left(\frac{1}{p} : \frac{1}{p'} \right). F. (N^\circ : M^\circ).$$

Where F . stands for field of vision, and $\frac{1}{p}$ for the fractional intensity, that of the white object being one.

MISCELLANEOUS CASES.

UNDER THE CARE OF DR. LITTLE,

MANCHESTER ROYAL EYE INFIRMARY.

REPORTED BY A. HILL GRIFFITH, M.B., HOUSE SURGEON.

SUDDEN PARALYSIS OF ACCOMMODATION COMPLETELY RESTORED IN A WEEK. NO SPECIFIC CAUSE.

The patient, an unhealthy looking lad of twenty-one, the subject of habitual constipation and acne rosacea of face and neck, came to the Hospital on the 18th of November, 1881, saying that his sight had gone suddenly bad when at his work as a compositor, on the evening of the 15th. He could not distinguish the types, and had not since been able to do his work.

He was not aware of any cause for the attack, and had been in his usual state of health. He never knew his sight to fail before.

The pupils were normal in size and sensibility to light. *Right eye*: hypermetropia $\frac{1}{36}$, and vision $\frac{6}{9}$; required a + 12 to read No. I. *Left eye* hypermetropia $\frac{1}{60}$, and vision $\frac{6}{9}$; reads No. I. with a + 12.

He was ordered a dose of castor oil, and a mixture containing tonic doses of quinine and strychnine.

He presented himself on the 22nd with his sight "as good as ever," reading No. I. at 5 to 18 inches without a glass, and $\frac{6}{9}$. Fundus of each eye normal. No note was made of the state of the fundus at the first visit.

HORIZONTAL HEMIOPIA WITH ATROPHY OF HALF THE OPTIC PAPILLA.

The patient, a fairly strong, healthy looking man, 42 years of age, came to the Hospital on the 26th of June, 1880, complaining that he could only see half of any object with his left eye. The history he gave of the onset of the eye-affection was the following: about two years ago, when sitting at home resting after his work, he noticed that he could only see half of any object with his left eye; he "tried to rub away the dimness." He feels convinced there was nothing the matter with his eye before that time.

Vision was found to be normal in each eye, and refraction emmetropic. The field of vision of the affected eye taken at twelve inches from the black board was found to be entirely wanting below a horizontal wavy line which lay from three to six inches below the fixing point. The field of vision of the right eye was normal. In the left eye the upper half of the disc was very pale and contained few vessels; the lower half was normal, as also the rest of the fundus. The right fundus was normal.

The urine contained no albumen; there was a rough systolic murræa at the apex with the first heart sound.

Patient suffered from slight shortness of breath, and occasional dull frontal headache. His habits were temperate; he never smoked; no history of syphilis or rheumatism; small-pox about three years ago.

He was ordered ten grain doses of iodide of potassium three times in the day.

The field of vision taken on four occasions during September and October of 1880, and February and April, 1881, showed no change. Vision remained normal as before.

The only feasible explanation of the condition of the optic nerve is embolism of one or more of the arterial twigs supplying the optic nerve.

CONGENITAL COLOBOMA OF IRIS IN RIGHT EYE WITH MICROPHTHALMOS ON OPPOSITE SIDE.

E. D., a healthy, lively female infant, aged three months, was brought to the Hospital on the 10th of January, 1882, by its mother. The right eye showed a complete coloboma of the iris situated exactly internally; the eye was of good size, and seemed otherwise quite healthy. No coloboma of the choroid could be seen, but a satisfactory examination was not practicable. The child evidently saw objects well with this eye. On the opposite side the fissure between the lids was very small, the lids hung down flat and gave the impression that enucleation of the globe had been performed. On separating the lids with the elevators one detected a black, shining, rounded body of the size of a small pea closely surrounded by conjunctiva. No pupil was to be seen.

The mother stated, as the cause of the child's deficiency, that she was sorely grieved by the death of one of her children which took place during her pregnancy. There is one other child, a girl of eight, whose eyes were examined, but nothing abnormal was present. The family history of father and mother threw no light on the condition of the child's eyes.

A CASE OF GONORRHOEAL OPHTHALMIA RAPIDLY CURED BY IODOFORM.

BY PRIESTLEY SMITH.

It happened by a rather curious coincidence that immediately after reading a proof of Dr. Grossmann's paper on "Iodoform in Ophthalmic practice," which appeared in the April number of the Review, I received a call from

a young man suffering from gonorrhœal ophthalmia. Impressed with the favourable results recorded in that paper, I prescribed the iodoform treatment. Its action was so speedy and complete that I think the case deserves to be briefly related in corroboration of Dr. Grossmann's experience.

Mr. ———, a professional actor, aged between 20 and 30, contracted a first attack of gonorrhœa three weeks prior to the time of his coming under my care. At the end of the third week, on a Friday afternoon, both eyes became rather suddenly hot, red, and uncomfortable. By the evening of the following day these symptoms had much increased, and it was with great difficulty that the patient got through his part in the play. Early on the Sunday morning he applied to me.

There was slight swelling of the eyelids; great injection and considerable œdema of the conjunctiva of both eyes; a yellowish shreddy discharge in the oculo-palpebral folds; no implication of either cornea; pain and a feeling of heat and pressure in the eyes. The patient was much depressed; he believed the inflammation of the eyes to have arisen from the urethral affection before I enquired as to the presence of the latter, and imagined that he had transferred it by the careless use of a towel.

He was directed to bathe and cleanse his eyes constantly with bits of lint dipped in iced water; iodoform, very finely powdered, was dusted into the eyes at middle-day and again at night.

On the following morning, Monday, the chemosis was very nearly gone, and the eyelids were more freely opened. The same treatment was continued, ordinary cold water being substituted for the iced water.

On the following Thursday, *i.e.* on the seventh day of the disease, and the fifth day of treatment, the patient resumed his duties on the stage, which were not such as to bring him into a conspicuous position. Two days later he left Birmingham. There was still a deep dusky redness of the conjunctiva, but no swelling, and little if any discharge. A fortnight later the patient informed me by letter that his eyes were very nearly well but that he was laid up with severe gonorrhœal rheumatism.

G. A. BERRY (Edinburgh). Subjective symptoms in eye diseases. (*Edinburgh Medical Journal*, February, 1882, p. 673.)

This paper gives a useful summary of certain of the subjective symptoms produced by disorders of the retina, optic-nerves, and visual centres, and points out their value in diagnosis and prognosis. It deals chiefly with *limitations of the field of vision*.

The field of vision suffers alteration or restriction in the following conditions :—Optic neuritis and atrophy ; functional amblyopia, *e.g.*, the toxic and hysterical forms ; retinitis, especially retinitis pigmentosa ; embolism of retinal artery, and thrombosis of the retinal vein ; opaque nerve fibres ; glaucoma ; detached retina ; tumours and foreign bodies in the eye ; chorooiditis ; and coloboma.

Detached retina.—The most accurate way of determining the area of the detachment, and of watching its progress, is to map out the field of vision. The detached portion of the retina retains its function to a small degree for a time, therefore the examination should be conducted with subdued light. The outline of the defect is frequently irregular and not sharply defined. If the defect occur in the lower part of the field it is likely to extend upwards, passing on one side, generally the inner, or on both sides of the fixation point ; it may involve the latter. Such an extension is less likely to follow when the defect occupies the upper part of the field (lower part of the retina). Central vision is usually impaired. Distortion of the retinal images is frequently perceived by the patient. Colour-vision is often disturbed. When the detachment is caused by a tumour the limit of the visual defect is more sharply defined, and central vision may remain unimpaired. Detachments occurring in both eyes rarely present any great degree of symmetry, but they have been known to do so.

Retinitis pigmentosa.—Occasionally, when there is an almost entire absence of pigment, mapping of the field is a valuable aid in diagnosis. There is marked concentric limitation together with good central vision. The extreme periphery of the retina seems to suffer in less degree than the remainder of the excentric area ; a narrow peripheral zone or belt or a small

temporal portion may retain light-perception after the function of the greater part of the retina is lost. The degree of peripheral vision varies greatly with the intensity of the light, hence in making comparative examinations similar conditions of illumination are indispensable. Colour-vision is normal. Berry records one case, however, of retinitis pigmentosa in which there was colour-blindness for red and green, probably congenital.

Embolism.—When one of the main divisions of the retinal artery is plugged, the defect occupies half the field, usually the upper or lower, and is then sometimes termed, though wrongly, hemianopia superior or inferior; or it may occupy a sector-shaped area of smaller size. After embolism of the main trunk of the retinal artery vision may be retained, more or less completely, in a small peripheral portion of the temporal half of the field; this fact may aid the diagnosis in a case where, through lapse of time, the ophthalmoscopic evidence of embolism is no longer decisive.

Glaucoma.—The field contracts from the periphery towards the centre. The defect is usually most marked in that part of the field which lies inwards and downwards from the centre. This part may be blind nearly up to the centre, while the rest is but little constricted and central vision remains good. It is asserted that the boundaries for colour-vision are contracted only in the same relative degree as those for black and white. If this prove to be a general rule, it will be of value as a distinguishing symptom in those occasional cases where the diagnosis between glaucoma and atrophy of the optic nerve is difficult.

Choroiditis; retinitis; injury; hæmorrhage; opaque nerve fibres; coloboma.—These conditions cause scotomata—interruptions in the field of vision—corresponding in extent with the damage of the retinal elements. A scotoma is termed *positive* when it is apparent to the patient as an area of darkness, *negative* when it causes no visual impression.

A form of choroiditis occurs in old people, limited to the region of the macula lutea, and not easy to detect with the ophthalmoscope; the degree of blindness in the scotoma varies greatly, but is generally sufficient to render the reading of newspaper type impossible; complete blindness never results from it.

In diffuse retinitis a zonular scotoma, complete or interrupted, may often be found, without corresponding ophthalmoscopic changes.

Large and small insular scotomata, the origin of which is obscure, are occasionally met with; they are not likely to disappear, but the prognosis is good as regards blindness if the function of the surrounding retina remains normal.

Hemianopia. The defect is usually, though not always, symmetrical and of equal extent in the two eyes. It usually affects the homonymous halves of the two fields. It may be complete, affecting the entire halves, or partial, affecting portions only; in rare cases it is limited to insular areas.

In complete hemianopia the line of separation is sharp and regular; it corresponds, for the peripheral parts of the field at any rate, to a vertical line drawn through the fixation point, but whether or not the loss of function involves exactly the half of the macula lutea is a disputed point. Berry has invariably found an apparent exemption of the macula towards the blind side to a distance of 2° — 5° . This may be due to want of exact fixation, but it is likely that both forms may occur, for the lesion causing hemianopia may have, theoretically, three situations, viz., the optic tract, the optic thalamus and its neighbourhood, and the cortex cerebri somewhere behind the fissure of Rolando (the angular gyrus according to Ferrier); its occurrence in the two former sites in association with hemianopia has been actually demonstrated. Vision on the one side, or a portion of the one side, instead of being totally lost may be merely more or less defective; it is probable that this abortive hemianopia might be found in all degrees of incompleteness if carefully looked for.

Colour-blindness has been known to occur in a hemianopic form, perception of colours being completely lost in the left half of each field, while for perception of light and form the fields remained entire.

Hemianopia remains, as a rule, stationary. In recent uncomplicated cases the discs appear healthy; later they may undergo a marked atrophic discoloration. It is asserted that the atrophy is most marked in the eye which corresponds to the blind half of the field, but the point requires confirmation.

Hemianopia may be complicated with complete atrophy of one optic nerve.

In addition to the ordinary homonymous form of hemianopia, temporal and nasal forms have been met with ; in the former the two outer, in the latter the two inner halves of the fields are lost ; both are exceedingly rare. Twenty-five of the temporal form, and eleven of the nasal are on record, but some of the latter may be regarded as doubtful.

Atrophy of optic nerve. Mapping of the field is here of great importance. Where there is no marked diminution in the size of the retinal vessels, atrophy cannot be diagnosed with certainty from the appearance of the papilla, for, apart from physiological variations, paleness of the disc and a low degree of central visual acuity may be present when there is no atrophy. If the boundaries of the field of vision remain normal no fear of progressive atrophy and eventual blindness need be entertained, however much the central acuity may be diminished. In progressive atrophy there is *invariably* a limitation of the field. The limitation is in many cases concentric, in others one portion of the field is more restricted than the rest. The limitation is more pronounced for colour than for light and form ; this does not prove that the loss of colour-perception is independent of the general loss of function, but the possibility of such an independence should be borne in mind. Central vision usually fails with peripheral, but in some cases the latter suffers much more severely in proportion than the former. Berry cites a case of supposed atrophy in which all but central vision was lost in both eyes, and yet this remained comparatively good ($\frac{20}{30}$ and $\frac{20}{70}$). He suggests, however, that this may possibly have been a case of double hemianopia in which the central area each time escaped ; in favour of this idea are the facts that the condition came on rather suddenly not more than six months before, that colour-vision remained normal, and that the visual acuity was found several months later to be unaltered.

One eye is commonly affected in advance of the other, but the manner in which the amblyopia develops is generally the same in both ; thus if any particular area is much restricted in

the field of one eye, the first symptoms may be looked for in the corresponding area in the field of the other.

Toxic amblyopia. In amblyopia of toxic origin (*e.g.* tobacco amblyopia), and occasionally perhaps in some other forms, a central negative scotoma, oval in shape, and involving an area corresponding to that portion of the retina which extends from the disc to a little beyond the macula, is met with. Central vision is lowered in varying amount. The defect is most obvious when tested with colours. If uncomplicated by other defects in the field, such central negative scotomata very frequently disappear when the cause has been removed.

The author urges that in the thorough examination of the functional activity, relative as well as absolute, of all parts of the retina we possess a means of immense value both in the diagnosis and the prognosis of cerebral and ocular disorders,—a means which is not at present perfected and worked out.

X. GALEZOWSKI, (Paris). Ophthalmic megrain: an affection of the vaso-motor nerves of the retina and retinal centre which may end in a thrombosis. (*Recueil d'Ophthalmologie*, January, 1882, *p.* 10; and *Lancet*, February, 1882, *p.* 176.)

The author holds that ophthalmic megrain is an affection of that part of the fifth pair which supplies vaso-motor nerves either to the visual centres—corpora quadrigemina, corpora geniculata, chiasma (!)—or to the peripheral parts connected with them—optic nerves and retinae. He records four cases in which ophthalmic megrain was followed by organic changes in the retina, causing permanent impairment of vision.

The ages of the patients were, respectively, sixty-seven, fifty-two, twenty-nine, and fifteen. The permanent loss of sight affected one eye only. Antecedent to the permanent loss of sight, there had been in each case a succession of attacks presenting all the characters of megrain—transient pain in the head, vertigo, and visual disturbance in one eye or both in the form of zig-zag flashes, scotoma, hemiopia, or total loss of

sight. In two of the patients the permanent loss of sight was accompanied with the ophthalmoscopic signs of obstruction of the retinal artery; in neither case was there any valvular disease of the heart; the diagnosis arrived at was spontaneous thrombosis of the retinal arteries, induced by prolonged spasmodic contraction. In one of these two cases, the patient's father was of gouty constitution and had suffered from megrain also. In the third case, the ophthalmoscopic changes were those of atrophy of the optic nerve, suggesting lesion situated in the visual centre. In the fourth case there was neuro retinitis together with thrombosis of some capillaries and a few spots of hæmorrhage. A case is mentioned in which megrain was associated with aphasia, and the latter became permanent. It is supposed that in all such cases the pathological changes are induced, in the first instance, by vascular spasm.

C. SCHWEIGGER. Hysterical disturbances of vision and treatment by strychnia. (*Klin. Monatsbl. für Augenheilk.* Nov. 1881, p. 415.)

Schweigger maintains that the disturbances of vision known as hysterical amblyopia, and hysterical colour-blindness are, in many cases at least, not real but imaginary; but that the simulation of these defects does not necessarily imply an intentional deception. The patient's consciousness is over-ruled by the idea that she cannot see. In the case of monocular simulated blindness, whether for objects or for colours, the artifice to be employed by the observer for the purpose of detection, consists in presenting an object to the supposed blind eye in such a way as to cause the patient to believe that her impression of it is received through the sound eye. Three instances are given in proof of the imaginary nature of hysterical blindness.

A girl aged 14 complained of asthenopic troubles. She had slight hypermetropia, and deficient convergent power in near vision. At the second visit she stated that the right eye had gone blind rapidly eight days before. Neuro-retinitis in both eyes; most marked in the right. Alleged absence of light-perception in right eye, but pupil remained active. Examined by prism and stereoscope, right eye had manifestly good vision. No incredulity was exhibited, and the case was shown at the clinic as one

which would be cured by subcutaneous strychnia injections. Injections of *distilled water* were employed, and the patient steadily improved, recovering nearly normal vision in three weeks. The neuro-retinitis still persisted, but in less severity. There was no other evidence of hysteria, and no appearance of intentional deception.

Another hysterical patient, in whom there was probably no desire to wilfully deceive, declared herself unable to distinguish a hand before her face with either eye. Yet she could walk about freely without running against any object in her path. Simultaneously with the alleged loss of sight there occurred an extreme and persistent convergence of the optic axes which could not be a matter of simulation.

A third hysterical patient complained of colour-blindness in the left eye; to this eye all colours appeared gray, to the right they appeared natural. A stereoscopic test proved that this alleged monocular colour-blindness did not really exist. A small piece of coloured paper placed in the right half of the left (colour-blind) field was correctly seen, the patient imagining that she received the impression through the right (sound) eye. Conversely, a piece of coloured paper placed in the left half of the right (sound) field, was seen gray, because the patient imagined that she saw it with the left (colour-blind) eye.

[Patients suffering from homonymous hemiopia frequently believe themselves to be blind of one eye. Is it quite certain that this patient who believed that she was colour-blind in one eye, had not a real bilateral hemiopic colour-blindness, as apparently indicated by the stereoscope? To judge from the description of this case as given by Schweigger, we have here to deal with another example in favour of Samelsohn's observation. See the following article.]

J. SAMELSOHN, (Cologne). The centre for colour perception. (*Centralbl. f. d. medic. Wissensch.*, 1881, No. 47 and No. 50.)

That the perception of colours is dependent on a centre distinct from those assigned to the perception of space and of light was suggested by the observation of some cases of congenital and acquired colour-blindness. By a detailed history of a most interesting example of hemiachromatopia in which the perception of light and space was normal, but that of colour

entirely lost in the left halves of the field of vision, Samelsohn gives a strong support to this presumption.

A man, 63 years old, sustained impairment of vision dating from an attack of apoplexy accompanied with right hemiplegia nine months previously; at the end of this period motion was partly restored and sensibility entirely. The examination of the eyes did not show anything abnormal, hypermetropia 1.25 D., vision about $\frac{1}{2}$, but in normal conformity with the age and optic media of the patient. The right superior rectus was slightly paralysed; the field of vision normal in extent, as tested with squares of white paper of various sizes. But as soon as coloured paper was used, complete colour-blindness of the left half of both fields was strikingly manifest. In this left half which was sharply vertically demarcated from the right half, every colour was perceived, but only as a more or less saturated grey, whilst in the right halves the colours appeared normal. Under treatment the paresis of the right superior rectus vanished, but the hemiachromatopia persisted. The patient died about four years later from a new apoplexy.

Samelsohn could not obtain a *postmortem* in this very interesting case, and therefore no anatomical evidence could be added. However, from cases described by Treitel and by Landolt, his opinion meets with strong support.

J. GORHAM, (Tunbridge). On the blending of colours by the sole agency of the sensorium. (*Brain*, January, 1882, p. 467.)

Gorham claims by a series of novel and interesting experiments to have furnished a definite affirmative answer as to whether or not different colours falling on each eye blend into one in the brain.

To those who are familiar with the physiology of the colour sense it will be apparent that a more likely explanation of the observed phenomena, is that they depend on an error of judgment, and belong to the class of subjective sensations. They do not differ essentially from what is known as *simultaneous colour contrast*, the only difference being that whereas in the one case the induced colour appears where there is a break in the prevailing sensation of one or both eyes, in the other the limited area stimulated in the one eye is overbalanced by the

widespread stimulation of the other. *Simultaneous binocular contrast* would express the nature of the phenomena. The experiments only show, what indeed could not have been doubted, that such induced sensations are of cerebral origin. (Although such sensations are called subjective, they must of course owe their existence to some cause, such perhaps as the appreciation of molecular movements).

Gorham uses two tubes, one of which, placed in front of the right eye, has a transparent end of coloured gelatine; the other tube, placed in front of the left eye, has an aperture at the end only $\frac{1}{50}$ of an inch in diameter in front of which can also be placed coloured gelatine discs when required.

The first experiment consists in closing the *right* tube by a lid of *green* gelatine, and admitting *white* light to the *left* eye through the needle hole; then, gazing on a sheet of white paper on the table, the right eye sees a large *green* disc and the left a small *pink* one. A similar experiment is made with blue in front of the right eye, giving yellow in the left, and the following conclusions are arrived at:—"That when one retina is fully impressed with the sensation of a given colour, and the other retina feebly illuminated with white light, a current of colour is set up between the two eyes, and that this current is propagated from that eye which receives the most light towards that which receives the least. And, moreover, that which is transmitted to the left eye is first the complementary, and then the colour itself, of that which impinges on the right retina."

Next a *green* film is placed in front of the puncture in the left tube, and a lid of *red* film before the right eye. The first effect is that the green of the small disc is intensified, but on removing the red film from the right eye "the little green disc has changed to *yellow*." This, he says, was confidently expected, "for the original colour, *red*, being suddenly withdrawn from the right eye, it is then, and then only, that it appears to the opposite eye. It is at this juncture therefore that the two sensations really blend and form the binary *yellow* hue." This explanation is evidently wrong because two truly complimentary colours could never combine into a yellow

which further on is described as "pure" and "brilliant." The probable reason, provided the observation be correct, of the yellowish tinge was the combination of unequal intensities of the complimentary colours. Similar experiments were made with red and blue, and with blue and yellow.

B.

E. SZILAGYI, (Klausenburg). On simultaneous contrast. (*Centralbl. f. d. medic. Wissensch.*, 1881, Nov. 19th, p. 149).

The author refutes the physical explanation of "simultaneous contrast" offered by Giraud-Teulon, which is this, that the dioptric media are rendered fluorescent by the agency of the "ground-colour," which they absorb in transmitting only its complementary colour to the retina.

Szilagyí puts over the one (right) field of an ordinary stereoscope a transparent coloured glass plate, in the centre of which a piece of black cardboard is fixed. The other (left) field of the stereoscope is covered by one or more layers of white tissue-paper. In the binocular combination the black spot of the right (coloured) plate shows the complementary colour, but only if both eyes are open. When the left eye is closed, the spot looks black, or shows a tinge like that of the ground-colour (most likely by dispersion of coloured light). When the right eye is closed, simply the left white ground is seen.

The author comes to the conclusions—

1. That simultaneous contrast has nothing to do with fluorescence.
2. That it is perceived, not by the retina but by the brain.

In the uniocular experiment the same must be true, though here, possibly, the afterimages may be partly answerable for the phenomenon.

BRACHET, (Paris). The surgical treatment of granular ophthalmia. (*Receuil d'Ophthalmologie. February. 1882, p. 68.*)

The author strongly advises the adoption of the surgical treatment employed by Galezowski in many cases of granular ophthalmia, namely, the removal by means of the scissors of the whole of the conjunctiva from the upper and lower culs-de-sac, followed by a few applications of mitigated caustic to the lining membrane of the lids. This treatment is rapid in its effects, and, as compared with other methods, is of very short duration; it ensures a complete cure without danger; it saves the cornea from the serious complications which attend the prolonged use of caustics, and it enables the cornea to recover its transparency and polish. It succeeds where other treatment has failed.

Galezowski, by whom the operation was introduced some years ago, is stated to have performed it more than two hundred times, and always with success.

During a sojourn of three years in Algeria, the writer gained a wide experience of granular ophthalmia, and of the little real benefit obtained by treating it with sulphate of copper and similar applications. In proof of the value of the surgical method he relates the history of two sufferers from this disease who were operated on in 1873 by Galezowski, and adds a description of their present condition. The one patient had suffered since infancy and had never been treated, the other had suffered for two years and had been laboriously treated at more than one ophthalmic clinique without permanent relief; neither was able to follow any employment. Excision of the conjunctiva followed by a few applications of mitigated caustic effected a permanent cure with restoration of corneal transparency. At the present time, eight years after the operation, vision is excellent; the culs-de-sac are wanting; the conjunctiva passes immediately from lid to globe in vertical cicatricial bands or folds, which in some places join the globe at a distance of 1 Cm. from the corneal margin; the eyelids are intact and well furnished with lashes; the lachrymal apparatus in each case performs its functions normally; the movements of the eyes do not appear to be hindered in any direction.

TEMPSET ANDERSON, (York). A prismatic optometer.
(*Specialist*, November, 1881, p. 40).

In prescribing spectacles it is necessary to ascertain whether the efforts of convergence and accommodation maintain a due relation to each other, and when a disproportion is found to exist it is proper, in certain cases, to neutralize it by giving the spectacles a prismatic action, either by decentring the lenses or by grinding them upon prismatic glasses. The object of this optometer is to facilitate the tests by which the amount of prismatic action required is determined.

Prisms of 18° , set in circular frames $2\frac{1}{2}$ inches in diameter, stand before the eyes. The edges of the frames are toothed, and gear into each other so that the prisms can be freely rotated, their movemnets being in opposite directions. When the bases of both prisms stand upwards or downwards, the prismatic action is entirely in the vertical direction ; when they stand both outwards, or both inwards, the prismatic action is entirely in the horizontal direction, producing divergence or convergence of the light-pencils, respectively. In any intermediate position the prismatic action may be resolved into a vertical portion which is neglected, and a lateral portion which affects the angle of convergence of the visual axes ; the amount of the latter is indicated by a graduated scale on one of the circular frames. A third prism is attached so that it can be placed base upwards, or downwards, before one of the eyes ; this causes a vertical diplopia, allows the eyes to assume their position of equilibrium, and reveals the presence of any tendency to "deviation" in the way well-known to all oculists. The rotating prisms are turned round until the two images stand vertically over one another, and the amount of prismatic action employed in effecting this is read off.

The instrument carries two other pairs of frames in front of the prisms, in which lenses, spherical and cylindrical, may be placed, with a graduation to show the position of the latter ; these frames may be approximated or separated

to a known amount by means of a wedge. The whole is carried by a graduated bar on which there is a sliding sight-object; the bar is graduated in inches, and also in the focal lengths of dioptric lenses.

S. SNELL, (Sheffield). A figure of the fundus oculi for case-taking.

We have received from Mr. W. F. Pilch, of 18, York Street, Sheffield, an india-rubber stamp made by him for Dr. Simeon Snell. It represents the disc and vessels of the fundus oculi, as shown in the accompanying illustration. It enables the sur-



geon to make without loss of time a figure in his case book, on which he can sketch the form and position of changes in the fundus. The one stamp, turned one or other way about, answers for both eyes.



RECENT LITERATURE.

A. RETINA. OPTIC NERVE. CENTRES.

- BERGER, P. Réflexe palpébral dans l'anesthésie chloroformique.
(Acad. des sciences. Séance 5. Dec. 1881.)
Arch. génér. de méd. Jan.
- COUTURIER. Des sensation colorées. Thèse. Paris, 1881.
- DEBICORE. Du décollement rétinien et de son traitement.
Thèse. Paris, 1881.
- DEKEERSMAECKER. Le daltonisme et les alterations du sens
visuel en général chez les agents de l'administration des
chemins de fer. Rapport présenté à M. le Ministre des
travaux publics.
Bruxelles, 1881.
- FERE, Ch. Mouvements de la pupille et propriété du prisme
dans les hallucinations provoquées des hystériques.
(Société de biologie. Séance 17. Dec. 1881.)
Gaz méd de Paris. Nr. 2.
- FERRE. Essai sur l'amnésie traumatique isolée. Thèse de
Paris 1881.
- GIRAUD-TEULON. Sur les systèmes chromatiques, par M.
Donders, analyse critique.
Ann. d'Oculist, 1882, p. 5.
- GIRMA. Des hallucinations dans la paralysie générale. Obser-
vations. Thèse. Paris, 1881.
- LANDOLT, E. A case of optico-ciliary neurotomy, failure,
enucleation.
Boston Med. and Surg. Journ., March, 1882, p. 226.
- LICHTHEIM. Ueber nucleäre Augenmuskellähmungen.
Corr.-Bl. f. Schweiz. Aerzte. Nr. 24.
- NAUDIER. Sun une ophthalmie causée par la lumière électri-
que Thèse. Paris, 1881.
- PONCET. De l'état du nerf optique et de la rétine chez un
ataxique aveugle depuis 10 ans.
Progrès Méd. Nr. 8

- URBANTSCHITSCH, V. Beobachtung von physiologischer Seelenblindheit.
Med. Jahrb. d. k. k. Ges. d. Aerzte zu Wien 1881, p. 543.
- WEINBERG. Zur Lehre von der diathetischen Retinitis.
Centralbl. f. prakt. Augenh. March, 1882.
- WERNICKE, C. und HAHN, E. Idiopathischer Abscess des Occipitallappens, durch Trepanation entleert.
Virchow's Archiv Bd. 87 p. 335.

B. UVEAL TRACT. VITREOUS AND AQUEOUS. LENS.

- ALIA. De l'iritis séreuse et des phénomènes glaucomateux.
 Thèse. Paris, 1881.
- ARMAIGNAC. Cataracte capsulo-lenticulaire survenue rapidement chez un jeune homme à la suite d'une irido-choroïdite. Opération et guérison rapide.
Revue d'Oculist du sud-ouest, 1882, p. 25.
- DEUTSCHMANN. Ueber genuine Glaskörpertuberculose beim Menschen.
Festgabe an Prof. Henle, p. 9. Separat-Abdruck.
- GALEZOWSKI. Persistence des vaisseaux hyaloidiens.
Recueil d'Ophth. March, 1882, p. 130.
- GALEZOWSKI. De l'influence des iritis et des choroidites sur le développement des cataractes.
Recueil d'ophtalmol Nr. 1. 1882. p. 75.
- INTERIANO. Contribution à l'étude du glaucôme hémorragique. Thèse. Paris, 1881.
- LATTEUX ET DESPAGNET. Observation avec examen histologique, d'un cas de mélanosarcome de la choroïde.
Recueil d'ophtalm. Nr. 1. 1882. p. 65.
- MICHEL, J. Ueber natürliche und künstliche Linsentrübung.
Festschrift zur Feier des 300jährigen Bestehens der Universität zu Würzburg. Separat-Abdruck
 Leipzig 1882, F. C. W. Vogel
- PERRIN, M. Ophthalmie purulente d'origine rhumatismale.
 (Acad. de méd. Séance 17. Dec.)
Gaz. méd. de Paris. Nr. 3.
- ROBERT. Essai sur la pathogénie des cataractes spontanées.
 Thèse. Paris, 1881.

- WOLFE, J. R. A case of tubercle of the iris and ciliary body.
Glasgow Med. Journ., April, 1882, p. 293.
- STORY, J. B. Melanotic sarcoma of eyeball.
Brit. Med. Jour., April, 1882, p. 544.

C. CORNEA. CONJUNCTIVA. SCLERA.

- ARMAIGNAC. Ankyloblépharon de la paupière inférieure et symblépharon partiel de la paupière supérieure consécutifs à un phlegmon traumatique de l'oeil gauche, traitement de l'ankyloblépharon par la suture élastique de caoutchouc et du symblépharon par autoplastie conjonctivale. Libération complète et permanente des paupières permettant l'emploi d'un oeil artificiel volumineux.
Revue d'Ocul. du sud-ouest, 1882, p. 49.
- ARMAIGNAC, H. Quelques considérations sur l'étiologie et le traitement de l'ulcère serpigneux de la cornée. Observation.
Revue d'oculist. du sud-ouest. II. p. 1.
- ARMAIGNAC, H. Erosion superficielle traumatique de la cornée chez un individu atteint de dakryocistite chronique; ulcère serpigneux et hypopyon consécutifs; insuccès complet des antiseptiques; guérison rapide par l'emploi du cautère actuel
Revue d'oculist. du sud-ouest. II. p. 6.
- AUGE. De l'influence de la première dentition sur le développement de la blepharo-conjonctivite. Thèse. Paris, 1881
- BLANCH. Périsclérite rhumatismale.
Recueil d'ophtalm. Nr. 1., 1881, p. 120.
- BROCHET. Note sur le traitement chirurgical de l'ophtalmie granuleuse.
Recueil d'ophtalm Nr. 1, p. 68.
- DELSOL. De la cautérisation ignée dans quelques affections de la cornée. Thèse. Paris, 1881.
- HAUSSMANN, Die Bindehautaffection der Neugeborenen. Stuttgart 1882. Ferd. Enke.
- KROLL. Ein Beitrag zur Lehre von der Keratitis neuroparalytica.
Centratbl. f. prakt. Augenh., March, 1882.
- MICHEL, J. Ueber die Cornealleiste des menschlichen Embryo.
Festschrift zur Feier des 300jährigen Bestehens der Universität zu Würzburg. Separat-Abdruck Leipzig 1882. F. C. W. Vogel.

- PFLUEGER. Zur Ernährung der Cornea.
Klin. Mon.-Bl., March, 1882, p. 69.
- POMEROY, O. D. Purulent ophthalmia.
Med. News, March, 1882, p. 230.
- RAEHLMANN, E. Ueber hyaline und amyloide Degeneration der Conjunctiva des Auges.
Virchow's Archiv. Bd. LXXXVII. p. 325.
- RÜBEL. Die scrophulösen Erkrankungen der Conjunctiva und Cornea, sowie ihr Verhalten zur sogen scrophulösen Diathese.
Centralbl. f. prakt. Augenh., March, 1882.
- VERNIER. De la blépharite ciliaire. Thèse. Paris, 1881.
- Prophylaxis of ophthalmia neonatorum.
Med. News, April, 1882, p. 365.

D. REFRACTION. ACCOMMODATION. MOTOR APPARATUS.

- AMADEI. Sulla craniologia delle anomalie di refrazione dell'occhio.
Ann. di Ottalm. Anno XI. Fasc. 1.
- ARMAIGNAC. Paralysie isolée et absolue du muscle droit supérieur chez une jeune fille de dix-sept ans, à la suite d'une fièvre typhoïde survenue à l'âge de cinq ans.
Revue d'ocul. du sud-ouest., 1882, p. 53.
- ARMAIGNAC. Paralysie congénitale complète du muscle droit supérieur gauche chez un enfant de deux ans.
Revue d'ocul. du sud-ouest., 1882, p. 57.
- BERTIN-SANS. Le problème de la myopie scolaire.
Annal. d'hyg. publ. Jan. 1882.

E. EYELIDS. LACHRYMAL APPARATUS. ORBIT.

- ARMAIGNAC. Drainage des voies lachrymales.
Revue d'oculist du sud-ouest., 1882, p. 58.
- AYRES, S. C. Inflammation of the lachrymal glands (acute dacryo-adenitis).
Med. News, March, 1882, p. 294.
- BERTHEUX. Kystes muqueux des sinus frontaux. Thèse. Paris 1881.

BULL, C. S. Malignant growth, probably osteo-sarcoma of the orbital walls, involving all the bones of the face and base of the skull, but mainly the sphenoid and ethmoid—bilateral exophthalmos—growth in the naso-pharynx and maxillary sinus.

Med. News. March, 1882, p. 317.

GAYET. De la cure de l'entropion par une opération autoplastique.

Ann. d'oculist., 1882, p. 27.

GERSTER. Epithelioma of the superior maxilla, eye, and nose.

N. Y. Med. Record, March, 1882, p. 298.

TEILLAIS. De quelques tumeurs de la région orbitaire.

Ann. d'oculist., 1882, p. 44.

F. MISCELLANEOUS.

ABADIE, CH. Du vertige oculaire.

Revue d'oculist. du sud-ouest. II. p. 19.

ALBERTOTTI. Sulla determinazione sperimentale della grandezza dell' imagine oftalmoscopica roversciata.

Ann. di Ottalm. Anno XI. Fasc. 1.

ALBERTOTTI. Sulla micrometria.

Ann. di Ottalm. Anno XI. Fasc. 1.

BOLLIET. De la greffe cutanée et de ses applications, principalement à la chirurgie oculaire. Thèse. Paris 1882.

BOUVIN, M. J. Het onlangs gewijzigde keuringsreglement, hoofdzakelijk beschouwd in verband met de eischen voor het gezichtsvermogen van het personeel bij de Marine.

Neederlandsch Tijdschrift voor Geneesk. Jaargang 1881.

BRAUN. Zur Aetiologie der Augenerkrankungen in Tunis und Goletta.

Allg. Wiener med. Ztg. Nr. 1 & 2.

CALMETTES. De l'ophthalmoscopie dans les maladies de l'oreille.

Progrès méd. 21 Jan. Nr. 3.

COPPEZ. Névralgie datant de vingt ans, guérie par l'elongation du nerf sous-orbitaire.

Ann. d'oculist., 1882, p. 59.

CUISNIER. De la pilocarpine dans la thérapeutique oculaire

Semaine méd. 26. Jan. Nr. 24.

DESPAGNET. Clinique ophthalmologique du Dr. Galezowski.

Recueil d'Ophth., 1882, p. 93 and 152.

- DE WECKER & MASSELOU. Emploi de galvanocaustique (galvanopuncture) en chirurgie oculaire.
Ann. d'oculist., 1882, p. 39.
- DOR ET E. MEYER. Revue générale d'ophtalmologie. Recueil mensuel bibliographique, analytique, critique; Tome I. Nr. 1. Paris 1882. G. Masson, éditeur.
- DREHER. Die Wirkungen des Lichtes.
Studenten-Zeitung. Nr. 9. & 10.
- ELY, E. T. Illustrative cases of disease of the eye, arising from affections of the teeth.
New York Med. Record, March, 1882, p. 258.
- EMMERT. Verletzungen des menschlichen Auges.
Corresp-Blatt f. Schweizer Aerzte. Nr. 24.
- ESCANDE. Considérations sur la scrofule dans ses rapports avec les maladies et les opérations de l'oeil. Thèse. Paris.
- FERE, CH. Mouvements de la pupille et propriété du prisme dans les hallucinations provoquées des hystériques. (Société de biologie. Séance 17. Dec. 1881.)
Gaz. méd. de Paris. Nr. 2.
- FERRE. Essai sur l'amnésie traumatique isolée. Thèse. Paris 1881.
- GALEZOWSKI. Cyanure de mercure dans la syphilis oculaire. (Soc. de biol. séance du 28. Janv. 1882.)
Progrès méd. Nr. 5. 1882. p. 84.
- GAYET, A. Quelques conseils raisonnés à propos des traumatismes oculaires et des premiers soins à leur donner.
Revue gén. d'ophtalm. Tome 1. Nr. 1. p. 3.
- HALL, G. C. Causes of blindness in India: Treatment and cure, &c.
N. W. P. and Oudh Government Press, Allahabad, 1881.
- HIRSCHBERG. Zur vergleichenden Ophthalmoscopie.
Archiv. f. Anat. & Physiol., *Physiol. part.* 1882, p. 81.
- HIRSCHBERG. Ophthalmoscopie. Lex-Art.
Eulenburg's Real-Encyclop. d. ges. Heilk.
- JANY. Ueber Einwanderung des Cysticercus cellulosae ins menschliche Auge, eine Entgegnung auf den in der Breslauer ärztlichen Zeitschrift (Nr. 23) vom 10. Dec. v. J. publicirten Vortrag des Herrn Prof. Dr. Hermann Cohn: Ueber fünf Extraktionen von Cysticercen aus dem Augapfel, Breslau 1882.
- JUHASZ. Atropinvergiftung geheilt durch Pilocarpin.
Klin. Mon.-Bl., March, 1882, p. 82.

- KERSCHBAUMER, ROSA UND FRIEDRICH. IV. Bericht der Augenheilanstalt in Salzburg. Ueber das Jahr 1881 und über ein 3., 4 und 5. Hundert Staaroperationen. Salzburg 1882.
- KLAUNIG, H. Ueber Glasaugen.
Schmidt's Jahrb. d. ges. Med. 1881. Nr. 11.
- LANDESBURG, M. Zur Kenntniss der Jaborandi- und Pilocarpinbehandlung in Augenkrankheiten.
Klin. Mon.-Bl. f. Augenh. XX. p. 48.
- LAVALLEE. De la cautérisation ignée en thérapeutique oculaire. Thèse. Paris, 1881.
- LETULLE. Sur un cas de zona ophthalmique compliqué de paralysie faciale.
Arch. de Physiol. Nr. 1. p. 162
- MARTIN. Weiterer Beitrag zur Frage von den Erfolgen der Dehnung des N. facialis bei tic convulsif.
Deutsche med. Wochenschr. Nr. 9 p. 121.
- PAJZDERSKI, J. Ueber die Wirkung der Jodoformsalbe in der Augenheilkunde. Dissert. Greifswald. Jan., 1882.
- RAMPOLDI. Anomalia di prima formazione dell' occhio.
Ann. di Ottalm. Anno XI. Fasc. 1.
- REID, T. Tumour of the eyeball.
Glas. Med. Jour., April, 1882, p. 297.
- ROSMINI. Rendiconto clinico dell' istituto oftalmico di Milano per il quinquennio 1874 bis 1878.
Gaz. med. Ital. Nr. 49 & 50.
- THAU. Clinique ophtalmologique du Dr. Dehenne.—Des retractions consécutives aux paralysies musculaires.
Recueil d'Ophth., March, 1882, p. 137.
- SCHENKL. Ueber Atropinvaseline.
Prager med. Wochenschr. Nr. 1.
- SCHWALBE. Die Fortschritte der Physik im Jahre 1877. XXXIII. 2. Optik. Berlin 1882.
- STELLWAG VON CARION. Abhandlungen aus dem Gebiete der practischen Augenheilkunde. Ergänzungen zum Lehrbuche. Unter Mitwirkung der Herren Prof. C. Wedl und Dr. E. Hampel. Wien 1882. Wilhelm Braumüller.
- STRICKER, S. Beiträge zur Kenntniss der Organgeföhle.
Med. Jahrb. der. k. k. Ges. d. Aerzte zu Wien 1881. p. 545.
- WILLIAMS, C. A contribution as to the efficacy of eserine in glaucoma and analogous affections.
New York Med. Record, March, 1882, p. 318.

About the Blind.

Med News, March, 1882, p. 284.

An Ophthalmic Hospital for Jerusalem.

Med Times and Gaz., April, 1882, p. 384.

Belfast Ophthalmic Hospital.

Brit. Med. Jour., April, 1882, p. 514.

Birmingham and Midland Eye Hospital, Erection of New Building.

Lancet, April, 1882, p. 624.

Edinburgh Eye Dispensary.

Brit. Med. Jour., April, 1882, p. 473.

Jahresbericht der Schöler'schen Augenlinik. 1881. Berlin 1882.

Jany'sche Augenlinik. 17. Jahresbericht 1881. Breslau 1882.

Report of Hospital and Dispensary at Nügata. Operations on the Eye.

Edin. Med Jour, April, 1882, p. 956.

The Brooklyn Eye and Ear Hospital.

Med. News, March, 1882, p. 280.

The Glasgow Ophthalmic Institution.

Brit. Med. Jour., March, 1882, p. 399.



A CASE OF DISLOCATION OF THE LACHRYMAL GLAND.

BY SIMEON SNELL,

OPHTHALMIC SURGEON TO THE SHEFFIELD GENERAL INFIRMARY AND TO
THE INSTITUTION FOR THE BLIND.

The following case is, I believe, so unusual that a brief record of it will not be without interest:—

On March 7th last, I was consulted by a tradesman, aged 45, in consequence of a "lump" he had noticed in the left upper eyelid. It had first been observed a week previously, and he had later on seen his own medical attendant, Dr. Bourke, who desired him to call upon me. The swelling he mentioned was now distinctly visible, but was particularly noticeable to the touch. Situated in the upper eyelid at its external part and coming from under the frontal bone, it was felt beneath the structures of the lid as about the size of an almond. It could be pressed between the fingers, but readily slipped back into the orbit; its surface felt more smooth than irregular. Pressure caused it immediately to recede into the orbit beneath the frontal bone, but after depressing the head it was again found to be visible in the lid. This he had himself observed before coming to me, and after several attempts to replace it, he always found on bending the head downwards that it had reappeared. He complained of it as causing him discomfort, which manipulation increased.

On the night before the first appearance of the substance in the lid the patient had gone to bed ailing nothing, and had detected it on rising in the morning. He had during the night been coughing a good deal.

The same side of the head is marked by a large venous subcutaneous nævus, which extends to the eyebrow and apparently passes into the orbit. The man is a free drinker, and is frequently laid up in consequence.

The question as to what the "lump" was did not present any great difficulty. Its situation, size, and feel suggested directly its being the lachrymal gland displaced, and this, I may add, was the diagnosis formed by the medical man by whom the patient was first examined.

It was decided in the outset to see what effect compression would have in keeping the gland replaced. A few days later the patient visited me for the purpose of commencing this treatment, but for some reason or other desired to postpone wearing a "pad" for a short time. At this visit, however, I pressed the gland well back with my finger, and kept it replaced. He left me without its having re-appeared. Being soon afterwards laid by with one of his attacks of illness, he did not again see me until five or six weeks later. The swelling in the lid was then no longer visible, and he asserted that it had not appeared since his last visit, and that he had lost the sense of discomfort previously complained of.

Spontaneous displacement of the lachrymal gland must, I imagine, be a very rare condition; I cannot recall a recorded case like the one I have described. I remember the case of a man under treatment for keratitis some years since in whom the glands were distinctly visible and freely movable in the eyelids. The condition was congenital. I am further reminded by gentlemen attending my clinique of another somewhat similar case, which came under observation since the one just referred to.

In the case now described there is some difficulty in determining the cause of the displacement. It is worthy of mention, however, that in his attack of illness after drinking bouts, the patient sometimes suffers from epileptiform convulsions, during which, so I am informed, the large venous *nævus* at the margin of orbit becomes greatly distended, looking as though it were almost ready to burst. As the *nævus* passes into the orbit close to the outer and upper margin it seems probable that the vascular engorgement referred to may have been concerned in displacing the gland and severing or weakening its con-

nective tissue attachments. The distention of vessels produced by coughing must also be remembered.

In case treatment by compression had been employed without success and without relief to the discomfort complained of, it would have been necessary to consider the advisability of excising the displaced gland. Thus far, fortunately, milder means have been successful.

SPONTANEOUS DISLOCATION OF THE LENS INTO THE ANTERIOR CHAMBER WITH SECONDARY GLAUCOMA.

BY PRIESTLEY SMITH,

OPHTHALMIC SURGEON TO THE QUEEN'S HOSPITAL, BIRMINGHAM.

The occurrence of glaucoma in connection with dislocation of the lens into the anterior chamber was first satisfactorily explained by Adolph Weber.* A brief notice of the matter together with explanatory figures may be found in the *Ophthalmic Review* for March, at page 114. In the ideal figure there given, (Fig. 4), which is intended to represent the glaucomatous condition, the periphery of the iris is supposed to be driven forward by pressure from behind in such a way as to close the angle of the anterior chamber; this peculiar relation of the iris was a matter of inference, not of actual observation, when the figure was drawn, but I have since been able to observe its real presence in a specimen of the disorder in question, and in a degree far more pronounced than that suggested in the figure. The history of the case is as follows:—

John A., a tailor, aged 55, presented himself at the Hospital on October 11, 1881 (I 516.) He stated that eight or nine days previously, while he was sitting sewing, with his head bent forwards over his work, "something seemed to strike

* Von Graefe's *Archiv.*, xxii. I.

through the right eye and through the head"; he had had dreadful pain in the eye and head ever since; the eye had become entirely blind in a day or two. He had been able to see very little with this eye as compared with the other one for a good many years, but had not noticed any change in its condition up to the time of the sudden attack which he described.

On examination the following conditions were discovered :—

Right eye, $V = O$; $T + 2$ or 3 ; intense ciliary injection. The lens lies in the anterior chamber; it is of large size; its upper margin is about 2 mm. distant from the upper margin of the transparent cornea, its lower margin is apparently just hidden within the angle of the chamber; there is a slight yellowish opacity in the nuclear portion. The pupil, as seen magnified by the lens, is rather above medium size, its upper margin appears to be nearly on a level with the upper margin of the lens but is hidden by total reflexion of light from the latter. Between the margin of the lens and the margin of the transparent cornea the iris is evidently in close contact with the posterior surface of the cornea. The anterior chamber is absolutely abolished, the whole of the posterior surface of the cornea being in intimate contact with the lens and iris. Cornea transparent; no reflex from fundus obtainable with ophthalmoscope.

Left eye, $Hm \frac{1}{40}$; $V = \frac{20}{40}$; Tn ; field of vision contracted peripherally; media clear; retinitis pigmentosa, small patches of pigment being freely scattered over the whole of the peripheral zone of the retina; disc pale.

On further questioning, after the discovery of the retinitis pigmentosa, patient gives a history of night-blindness. His parents were not blood-relations; the father died at 100 years of age, less 12 days, the mother at 98, both with good sight and hearing. Patient has one brother living aged 76, and four sisters aged from 50 to 64, all with good sight and hearing; no family history of deafness or blindness.

As regards treatment the choice lay between an attempt to extract the displaced lens, and excision of the eye.

Restoration of vision was out of the question, for the eye had previously been nearly useless, presumably by reason of an advanced retinitis pigmentosa, and was now absolutely without light perception; considering the high tension and the peculiar position of the iris an attempt to extract the lens did not offer much prospect of subsequent safety; the patient was therefore advised to submit to excision of the eye, and did so the same day. Pain ceased at once, and the man left the hospital four days later.

Examination of specimen. After being slightly hardened in Müller's fluid the eyeball was frozen and divided in the vertical meridian of the cornea. Figure 1 shows the position of the lens and other structures in the anterior part of the eye, the lower margin of the lens where it was hidden in the angle of the chamber being to the right, the upper margin to the left. Figure 2 is from a microscopic section taken from the lower part of the circle; it shows the position of the iris in relation to Schlemm's canal. Both figures were traced with the aid of the microscope-mirror, on a larger scale than that here given, and were reduced by photography upon the block; as regards outline and scale they are therefore quite accurate.

The lens lies, as seen previous to excision, eccentrically in the anterior chamber, its lower margin being 1 mm. distant



Fig. 1.

MAGNIFIED 5 DIAMETERS.

from the insertion of the iris and Schlemm's canal. Its anterior surface throughout its whole extent is in contact with the cornea. The anterior surface forms with the posterior a remarkably abrupt angle very different from the rounded margin of the normal lens. The iris, from its origin up to the margin

of the lens, is in contact with the cornea; beyond that point it is in contact with the posterior surface of the lens. It is much reduced in thickness. (The small spaces visible in Fig. 1 between the lens margin and the cornea, and in Fig. 2 between the iris and cornea, were not present when the specimen was first divided.) Lens and iris have evidently been moulded into their present remarkable form by strong pressure from behind. In the divided specimen the parts which are thus in contact separate very readily from each other, there is no layer of exudation or other substance between them; in the microscopic sections it is impossible to retain them in apposition.



Fig. 2.

MAGNIFIED 20 DIAMETERS.

The ciliary processes are not in contact with the iris. Shreds of the torn suspensory ligament remain adherent to them. Springing from the retina at and near the ora serrata are several reticulated layers of very thin membrane forming a septum across the eyeball and marking the anterior limit of the vitreous chamber; they probably represent the remains of the degenerated and shrunken vitreous body. The retina is not detached; when raised from the choroid it is found to be thickly studded on its outer surface with patches of adherent pigment. The corresponding surface of the choroid also is very thickly covered with pigment patches. The optic disc is cupped, the lamina

cribrosa being much displaced and the nerve tissue of the disc hollowed out rather deeply; the excavation reaches very nearly to the scleral margin on the one side but is separated from it on the other by a considerable thickness of nerve tissue.

The condition of the optic disc suggests that there was already some excess of tension in this case before the dislocation of the lens occurred, for the excavation is greater, I think, than could be produced in eight days even by the very high pressure which was present here. It seems not unlikely that an excess of pressure in the vitreous chamber was the immediate cause of the dislocation. But whether this were so or not, it is clear that an acute and violent glaucomatous attack quite different from anything which had occurred before was directly connected with the displacement of the lens. The explanation is found in the position of the iris; a more absolute barrier to the stream which in the healthy eye passes from the posterior chamber through the pupil to the anterior chamber and thence filters outwards through the ligamentum pectinatum, could hardly exist.*

The total evacuation and abolition of the anterior chamber in this case separates it from the more common forms of glaucoma. In primary glaucoma, and other allied forms, a certain quantity of aqueous fluid is always imprisoned in the aqueous chamber, because the first effect of the pressure from behind is to close the outlet of the chamber, as I have demonstrated elsewhere. But this only happens when the lens and its suspensory ligament form an unbroken septum which when it advances carries the ciliary processes before it; in the case now under notice this septum was destroyed and the iris was

* I do not overlook the statement recently made by Ulrich (von Graefe's Archiv. xxvi, iii p. 35) that the normal stream passes forwards *through the base of the iris*, and not through the pupil; I venture to think that the method of the experiments was not such as to establish this point, and that clinical observation disproves it. My grounds for this assertion must be reserved for another occasion.

not subjected to any greater pressure at its periphery than elsewhere, it was able therefore to drive the aqueous fluid out of the chamber.

I have elsewhere recorded the case of a girl aged 22, whose right eye suffered at least four separate severe glaucomatous attacks caused by the spontaneous transit of an unattached lens into the anterior chamber, each attack subsiding coincidently with the spontaneous return of the lens to the hinder side of the iris.* It is at first sight difficult to conceive, especially if one regards figure 1 in the present article, how the lens while subjected to such pressure from behind could by any possibility make its way backwards through the pupil; but it seems likely, as I have suggested in the work referred to, that in certain cases the pressure may effect its own cure by forcing the iris forwards until the border of the pupil is dragged round the margin of the lens. This spontaneous restitution would be less likely to occur in advanced life, when as in the case here recorded, the lens is of large diameter† in relation to the pupil, than at an earlier period when the lens is smaller and the pupil usually more easily dilatable.

NOTE ON THE IODOFORM TREATMENT OF BLENORRHOEA NEONATORUM.

BY KARL GROSSMANN.

In the *Deutsche Medicinal-Zeitung* of the 11th of May I find an account of a paper published by Dr. Lange in the *St. Petersburg Med. Journal*, where he gives his experience as to the treatment of blenorrhœa neonatorum with iodoform.

* Glaucoma : its causes, &c., 1879. Case 25, p. 262 and p. 183.

† The fact that the healthy lens steadily increases in size with the advance of life was demonstrated at the Internat. Med. Congress, 1881, by a table of weights and volumes; since then it has been still further confirmed and rests at present upon the examination of nearly a hundred lenses.

In 6 cases which could be traced to catarrh of the maternal vagina, Lange applied iodoform powder about three to four times a day, leaving off caustics, and only cleansing the conjunctiva often with lukewarm water. On the second day the secretion seemed to be increased, but thinner; after 3 days' treatment, a plentiful and rapid development of villous granulations on the lids set in and increased, though from the fourth day Lange applied caustics in addition to iodoform. The secretion decreased, but not the granulations, which swelled enormously and easily bled; so that he gave up the iodoform after 6 days, and finally obtained a cure under the usual caustic appliances.

He therefore suggests the avoidance of iodoform in these cases.

Lange has probably not seen my accounts in the April number of the *Ophthalmic Review*, since the appearance of which I have had such ample experience that I feel justified in recommending the treatment quite as strongly as before. I only once saw granulations sprout up, and in that case a fresh specimen of iodoform not properly powdered had been applied. I drew attention before to the danger which necessarily must arise from the mechanical irritation of the sharp crystalline edges; and Dr. Lange's mode of using the drug seems to specially favour this effect. He applies the powder three or four times a day, and every time to both everted lids. Now the upper palpebral fold is particularly apt to retain the crystals and to suffer from the consequent mechanical irritation.

It is necessary to pay attention to this circumstance, by noting which and using the drug finely powdered my results have since been uniformly favourable.

An application twice a day seems sufficient, the powder being so slightly soluble; and even once a day I have often found to be sufficient. It stands to reason that any powder applied in sufficiently large crystals must act as a strongly irritating foreign body, quite irrespective of its chemical blandness or severity.

Quite lately I observed that a fresh specimen of iodoform was adulterated with potassium and other salts slightly irritating to the conjunctiva. I therefore washed the drug, and then experienced no further disagreeable effect.

H. SCHOELER, (Berlin). Sclerotomy: evidence against the permeability of scleral cicatrices. (*Transactions of Internat. Med. Congress, 1881. Section: Ophthalmology, p. 100.*)

Schoeler has attempted by experimenting upon rabbits to decide the question as to whether the cicatrices which result from the operations of iridectomy and sclerotomy in glaucoma are in reality permeable by the aqueous fluid.

With a narrow knife, incisions similar to those practised in sclerotomy, and varying from 4 mm. to 10 mm. in length, were made at a distance of $\frac{1}{2}$ mm. to $1\frac{1}{2}$ mm. from the corneal margin. In some cases the incision was completed and in one it was combined with excision of the iris-segment; in others a conjunctival or scleral bridge was left undivided; prolapse of the iris with a resulting cystoid cicatrix was obtained in two instances; in certain cases the same eye was subjected to several repetitions of the sclerotomy, time be allowed for complete healing before the operation was repeated. The eyes thus operated on together with the companion non-operated eyes were submitted some time afterwards to a manometrical test similar to that previously employed by Leber (*vide* Von Graefe's Archiv. xxv. iv.) by which the rate at which fluid under a given pressure found exit from the anterior chamber was ascertained. The fluid employed for the injection was a weak solution of common salt. This was introduced into the anterior chamber under a pressure of 27 mm. Hg.—the normal intraocular pressure; an additional pressure of 100 mm. Hg. was then superadded; and the rapidity with which this extra pressure subsided was accurately noted.

In every instance of a single sclerotomy, with one exception, the difference between the rates of subsidence (*i.e.* of filtration) in the operated and non-operated eyes respectively was so

slight as to lie within the limits of possible error of observation, but assuming that the difference was a real one, it indicated in each instance a *retardation* of filtration in the operated eye. In one case the difference was a considerable one; while the mercury fell 92 mm. in the sound eye, it fell only 80 mm. in the operated eye during the same interval of time (25 minutes.)

It was ascertained further, with magnifying glass and blotting paper, that under the pressure before mentioned the surface of the cicatrix remained dry; even in an eye tested on the third day after the sclerotomy no transudation was discoverable. Under higher pressures, varying from 200 to 300 mm. Hg. according to the length of time elapsed since the operation, fluid was observed to exude and collect in fine drops on the surface of the cicatrix.

In the case of cystoid cicatrix, which according to some is the prototype of a filtration scar, no fluid escaped through the staphylomatous tissue until it was ruptured by very high pressure; in one of the two cases, however, at one point of the lower lip of the wound a minute drop of fluid formed from time to time under the lesser pressure of 100 mm. Hg. above the normal.

In every case in which sclerotomy was repeated several times upon one eye the result was a very decided retardation of filtration; for example, after 4 sclerotomies the pressure fell 62 mm. Hg. in the operated eye, 100 mm. in the sound eye, in the same time. The idea suggested itself that by repeating the sclerotomy a sufficient number of times a complete annular cicatrix might be obtained and thereby an arrest of all filtration. This was found to be impossible however. A glaucomatous condition was not induced, the reason assigned being that an incision sufficiently peripheral to cause cicatricial closure of all channels of outlet could not be effected without loss of vitreous, and that abnormal channels were developed between the successive operations.

From these experimental observations Schoeler draws the following conclusions:—

1. Iridectomy and sclerotomy scars are not filtration-scars; the cystoid cicatrix likewise permits of no continuous transuda-

tion but only gives exit to fluid from time to time by bursting. Hence, judging by analogy, filtration-scars have no existence.

2. A single sclerotomy-cicatrix does not promote, but rather retards filtration from the eye; several such cicatrices produce a very marked retardation. In presence of glaucoma therefore such cicatrices constitute a permanent evil which must detract from the advantage gained by the paracentesis.

Sclerotomy, stripped of the supposed properties of a filtration scar, acts merely as a paracentesis of similar dimensions; therefore all the disadvantages which clinical experience has shown to belong to the latter, must belong also to the former. Those who have practised sclerotomy successfully in the various forms of glaucoma will hardly be persuaded by the results of these experiments to abandon the operation, or to admit that it has all the disadvantages which have led to the abandonment of paracentesis; clinical experience in this matter will certainly hold its own against experiments performed in the laboratory even although the results obtained in the two cases should seem to be irreconcilable. But when closely examined they do not seem to be so.

Professor Schoeler has established the important fact that in the eye of the rabbit the effect of a scleral incision at the angle of the anterior chamber is to diminish rather than to increase the permeability of the incised tissues, and it may be granted, as being at least in the highest degree probable, that under ordinary conditions the effect upon the human eye would be the same. But this does not invalidate the belief that the cure of glaucoma by a scleral incision is due to a restored filtration through the incised region. In the opinion of the present writer the weight of evidence, including that supplied by these very experiments, goes to show that both in iridectomy and in sclerotomy the cure is essentially due to the opening up of an outlet for the pent up fluid; and that iridectomy, which is superior to sclerotomy where it can be safely performed, owes its superiority simply to the greater completeness and patency of the outlet formed.

Between the eye of the rabbit and the eye suffering from glaucoma there is this essential difference, that in the former case the outlets are patent and of ample extent, while in the

latter they are greatly obstructed or closed; in the former case there is no physiological need for any additional channel of escape, in the latter the urgency of this need is asserted by the increased pressure within. A single sclerotomy in the rabbit's eye slightly decreased the rate of filtration; several sclerotomies performed one after the other so as to include the greater part of the circle decreased it more; but the significant fact is this, that it was impossible even by these repeated operations to reduce the filtration sufficiently to produce any increase in the pressure of the intraocular fluids as indicated by the manometer. It would seem that even though the filtration channels be repeatedly injured by the knife they will re-establish themselves to a sufficient extent to meet the physiological requirements of the eye and preserve its normal tension.

In glaucoma the effect of the increasing pressure within the eye is to compress the angle of the chamber more and more tightly, cutting off all access to the filtration channels and rendering compensatory changes in these latter impossible; in this condition of things an incision which opens up the angle of the chamber not only permits an immediate escape of fluid, but appears according to clinical observation to lead to a permanent re-establishment of filtration. That it should be so is not incompatible with the fact established by Prof. Schoeler that the outlets of the healthy eye are damaged rather than improved by a similar operation.

The phenomena in question are not altogether unlike the well-known behaviour of certain other parts in relation to the retention and escape of secretions. An opening into the bladder or urethra will heal rapidly and soundly where there is no obstruction to the escape of the urine along the normal channel but in presence of a stricture any abnormal outlet which the urine can find becomes permanently established as a fistula. The same is true of the lachrymal sac.

Whether the effect obtained by a scleral incision in the glaucomatus eye is merely a condition of leakage through a permanent fistula, or a filtration through newly-formed or enlarged channels similar to those which normally exists appears uncertain. Judging from the observations made by Professor Schoeler as to the non-escape of fluid through the cicatricial tissue; from the

absence of any evidence of a persistent leakage in cases which are cured by operation ; and from the fact that in order to effect a cure the incision must lie in the region of the normal filtration channels, it appears highly probable that a true filtration into the vascular channels is re-established. Direct evidence as to this matter could only be obtained by examining with the microscope and otherwise eyes which have been successfully operated on for glaucoma.

P. S.

C. S. BULL, (New York). Syphilitic diseases of the lachrymal apparatus. (*New York Med. Journ.*, April, 1882, p. 360).

In discussing the effects of syphilis upon any organ, it is important to distinguish between those lesions which arise directly and primarily in that part, and those which are secondary to syphilitic changes in neighbouring parts. The lachrymal apparatus may be affected by syphilis in very various ways.

Lachrymal gland.—Primary disease of the lachrymal gland due to constitutional syphilis is in the highest degree rare ; only two cases have been recorded. Bull has met with one instance of syphilitic periostitis of the orbit extending to and involving the gland ; there was excessive exophthalmos ; the contents of the orbit were enucleated to relieve pain ; the gland was enlarged through increase of its connective tissue elements, not through hypertrophy of the glandular structure proper. The patient was profoundly syphilitic, and subsequently died of meningitis and gummy tumour of the dura mater. Such cases also are rare. No example of gummatous infiltration of the gland has as yet been described.

Lachrymal caruncles.—Two cases are on record in which, coincidently with other late syphilitic lesions, both caruncles became enlarged by gummy infiltration. The tumours were so large as to protrude between the closed lids ; they were firm to the touch and did not ulcerate ; they were entirely independent of any conjunctival inflammation and of any disease of the lachrymal sac or bone ; their course was painless and

chronic, and without any signs of an inflammatory character. In the one case the tumours were removed by operation, resulting in considerable deformity ; in the other case, under "mixed treatment," they returned to the normal size in ten months, and then passed into a state of complete atrophy.

Canaliculi, sac, and nasal duct.—The conjunctivitis which frequently accompanies syphilitic iritis may spread to the canaliculi and set up a constant epiphora ; it may even extend to the sac, though dacryo-cystitis is more commonly caused by mischief travelling in the opposite direction—from the nose. A chancre on the eyelid may damage the punctum and canaliculus ; in two cases seen by Bull complete obliteration followed the ulcerative action. Papular or tubercular syphilides occurring on the lids may obliterate the punctum by ulceration, unless proper antisiphilitic treatment be employed.

Inflammation of the sac is not a rare manifestation of syphilis. Occasionally it may be an extension, as stated above, of a conjunctival inflammation ; more often it arises in the opposite way. The focus may be a periostitis or endostitis of the nasal duct resulting from constitutional syphilis, perhaps accompanied by the formation of a subperiosteal gumma. Such gummata, Bull believes, are not very uncommon. Another source of obstruction in the duct, and hence of inflammation in the sac, is a mucous patch on the wall of the nose at the mouth of the sac. The author has seen two such cases ; in both there were extensive mucous patches in the buccal cavity, and on the vulva and anus. Purulent dacryo-cystitis generally indicates disease of the periosteum or endosteum of the nasal duct, or caries of the bony canal or lachrymal bone.

Obstruction of the nasal duct as a result of syphilis is usually located, according to the author's experience, at or near the mouth of the duct. Beginning here it tends to spread upwards so that the stricture may in time involve the whole length of the duct. If the periosteum or bone be involved the canal may be obliterated or a lachrymal fistula may be formed, but abscess and fistula are not common results of syphilis unless there be caries of the lachrymal bone or of the nasal process of the superior maxilla. Though usually a late manifestation, syphilitic obstruction of the duct may occur with the first signs

of constitutional affection. Disease of the palate or pharynx usually accompanies disease of the duct.

The bony wall of the duct may be destroyed in two ways, viz., by otitis and caries, or by necrosis; in the latter case sequestra are formed which require removal by operation. The disease sometimes occurs primarily in the superior maxilla. It may cause total obliteration of the duct by falling in, and subsequent inflammatory adhesion of the bony surfaces.

Gummatous growths also are said to occur in the wall of the duct and sac, obliterating the passage very rapidly and leading to suppuration.

Hyperplastic processes in the bones themselves—hyperostosis and exostosis—have been known to encroach upon and obstruct the lachrymal passages. The author cites several examples. They are generally situated on the superior maxillary bone.

Treatment.—For the obstruction of the canaliculus which results from the extension of conjunctivitis in cases of syphilitic iritis no special treatment of the lachrymal passages is required.

When there is a swelling over the sac, with discharge of mucus or muco-pus, and probably a stricture in the duct, constitutional treatment by the rather rapid use of mercury should be employed before operation is resorted to. Improvement in the lesion begins sometimes on the third or fourth day, and many cases may be completely cured without incising or probing.

In chronic cases, with caries of the bony wall, a course of iodide of potassium in full doses should be given; even when a fistula is already present with extensive disease of the bones this will sometimes effect a cure without the aid of knife or probe.

Where caries has led to total obliteration of the calibre of the duct an attempt should be made to allay the purulent inflammation by slitting up both canaliculi and washing out the sac with astringent and antiseptic solutions. If this fails the sac should be destroyed; it may be laid open by a free incision through the fistula where this exists; if there be no fistula the sac may be opened within the canthus by connecting the incised canaliculi by a long vertical incision. The sac is to be destroyed by caustic or cautery. Epiphora remains for a

time, but it diminishes and may disappear entirely, possibly through compensatory atrophy of the secreting apparatus.

[Compare Schreiber on extirpation of the lachrymal sac.—*O. R.*, December, 1881, p. 34.]

A. H. BENSON, (Dublin). **Coloboma of the choroid and optic nerve sheath.** (*Dublin Journ. of Med. Science*, March, 1882, p. 177).

This paper describes two cases of coloboma exhibited at a recent meeting of the Medical Society of the King and Queen's College of Physicians. Ophthalmoscopic drawings are appended. Both cases were discovered while the writer was assisting Dr. Fox in examining, for statistical purposes, the eyes of the deaf-mutes in the institutions about Dublin. Both patients were deaf and dumb.

In the one case there was, in each eye, coloboma of the choroid without implication of iris or disc. In the other case there was in the right eye an enormous coloboma of the optic nerve sheath—the largest on record—associated with, but separate from, a very small coloboma of the choroid; and in the left eye a smaller coloboma of the optic nerve sheath, without coloboma of either choroid or iris, but in the position of the junction of the lips of the foetal fissure a disturbance of the pigment layer, suggesting the idea of a raphé, where the trouble just stopped short of the production of a coloboma.

From these cases the writer concludes:—

1. That coloboma of the choroid may exist without corresponding coloboma of the iris.
2. That closure of the fissure in the pedicle (optic nerve) takes place independently of the fissure in the optic cup.
3. That the fissure may close in the optic nerve and remain open in the bulb; or may close in the bulb and remain open in the nerve; or may remain open in both bulb and nerve, closure having taken place in the interval between the two colobomata.

S. THEOBALD, (Baltimore). Useful vision maintained through a number of years by the aid of a totally dislocated lens. (*Trans. of Amer. Ophthal. Soc.*, 1881, p. 225.)

The subject of this interesting observation was a boy, aged 12. In each eye the transparent lens lay unattached and freely movable in the vitreous. The eyes were slightly hyperæmic, the anterior chambers abnormally deep, the irides tremulous, the tension somewhat below the normal; the right pupil occupied an excentric position near to the upper margin of the cornea; each eye presented a myopic crescent and a general thinning of the choroidal pigment.

When the head was erect each eye had $V = \frac{15}{200}$. The boy had never worn glasses but had acquired in early childhood the habit of bending the head forwards, the face toward the floor, so as to throw the lens of the left eye into position behind the pupil. With the head in this position he read Jaeger I. fluently, holding it at one inch and a quarter from the eye. He had attended school regularly and had not only been able to study his lessons satisfactorily, but had been much given to reading for pleasure, in fact was quite a book-worm.

When the lens was brought into position in the manner described the eye was very highly myopic ($M = \frac{1}{1\frac{1}{3}}$); when it lay below the pupil the refraction was hypermetropic ($H = \frac{1}{6\frac{1}{4}}$); this low degree of hypermetropia with aphakia proved that the globe was myopically elongated. But the axial myopia thus indicated accounted for less than one-third of the myopia which existed when the lens was in position; the high degree of the latter was therefore manifestly due to an unusual convexity in the dislocated lens.

Assuming that the distance of the lens from the retina was as great as though it had been normally suspended behind the iris, which judging from the depth of the anterior chamber was not the case, its focal length was not only much shorter than that of the *unaccommodated* lens of the diagrammatic eye of Helmholtz, but somewhat shorter even than that given by him for the *accommodated* lens. It cannot be asserted that this lens was the exact equivalent of a normal lens just liberated from the restraint of the suspensory ligament, but its extreme convexity appears to support the generally accepted accommodation theory of Helmholtz.

OPHTHALMOLOGICAL SOCIETY OF GREAT BRITAIN

THURSDAY, MAY 11th, 1882.

WILLIAM BOWMAN, F.R.S., President, in the Chair.

Microscopic Structure of Growth at the Corneal Margin, exhibited in situ by Mr. Mason at a former Meeting.—Dr. Brailey reported that he had found the tumour to consist chiefly of fibrous tissue, through which numerous oval or angular nuclei were distributed; it appeared to have been covered by a layer of epithelial cells derived from the conjunctival epithelium. He considered it to be a fibroma which had grown in the most superficial layers of the cornea. From the microscopical characters, recurrence was not anticipated, and none had up to the present time occurred.

Disease of the Optic Nerve associated with Retinal Detachment.—Dr. Brailey related the case. The patient was a man aged 50. The eye was highly myopic; the vitreous contained numerous floating opacities; the optic disc was cupped centrally and had a myopic crescent at its outer side; vision only amounted to counting fingers, and was entirely absent from the upper part of the field. There was a retinal detachment at, and below, the macula. It was supposed that the detachment might be due to a new growth, and the eye was therefore excised. The detachment proved to be due to a colourless liquid in the sub-retinal space; the optic nerve was much thickened owing to a new formation of fibrous tissue within it; the fibrous growth contained large cavities, not unlike those which in myxomatous tumours of the optic nerve contain mucous tissue; in this case they did not appear to contain this mucous material. The eye had been affected with glaucoma.

The President elicited that the presumptive diagnosis of a sarcoma was based chiefly on the peculiar position of the detachment together with the age of the patient.

Extreme Tortuosity of the Arteries and Veins of the Retina.—Mr. Benson showed drawings of the fundus oculi from a young woman, aged 17. The veins and arteries were very large and tortuous in both eyes; there was no evidence of past neuritis, nor excessive tortuosity of the temporal or radial arteries; there was some hypermetropia and convergent strabismus; a success-

ful squint operation was not followed by any alteration in the retinal vessels.

Dr. Stephen Mackenzie said that there were analogous cases of tortuosity in external veins which had been shown to be rather a peculiarity than a disease.

Mr. Nettleship spoke of two cases, and exhibited a drawing, in which a remarkable tortuosity affected the veins, but not the arteries. One of these cases was that of a medical student who had no error of refraction, and no disturbance of vision. The tortuosity seemed to be entirely confined to the retinal vessels.

Sympathetic Iritis occurring Thirty-two days after Enucleation of an Eye for Accident.—Mr. Simeon Snell contributed an account of the case. A man, aged 26, was injured on September 26th, 1881, by a piece of steel. The cornea and lens were wounded. A careful examination, soon after the accident, appeared to negative the presence of a foreign body in the eye; atropine drops and a cold pad were ordered. On the twenty-eighth day after the accident the lens was evacuated through an upper corneal incision, subsequently the injured eyeball was painful at times, but inflammatory signs subsided and the eye commenced to shrink. The sound eye suffered only from sympathetic irritation. Excision was refused until December 9th; it was performed on that day. A piece of steel was found in the lower ciliary region. Little change was apparent in the remaining eyeball, but he complained of "mist" in front of the eye at the end of a week or so; there was no evidence of neuro retinitis, and a weak solution of atropine, three weeks or more after enucleation, produced wide dilatation of the pupil. On January 9th, 1882, one drop of a 1 per cent. solution of eserine was inserted. He complained of pain and discomfort on the following day, and when seen on January 11th there was severe iritis; this subsided under atropine and rapid mercurialisation. He made a satisfactory recovery and could read Jäger 1. Eserine was used in consequence of an observation at a recent meeting of this society on its value in sympathetic irritation. Did it excite the outburst of iritis in this case? The iritis occurred thirty-two days after enucleation, and one hundred and six after the primary injury.

Sympathetic Inflammation after Enucleation of an Injured Eye.—Mr. W. Adams Frost related the case. The patient was a girl, aged 9. The cornea and sclerotic of the left eye were wounded. Enucleation was advised, but the consent of the parents could not be obtained until the thirty-fourth day; the right eye at that time and for a week later showed no symptoms, but on the fifty-sixth day after the accident dimness of vision came on, and a week later there was keratitis punctata; the patient was treated with mercury and atropine, and recovered with normal vision.

Mr. Shadford Walker asked whether there was any clinical evidence that mercurial treatment was beneficial in such cases. He had seen no benefit from mercury in non-syphilitic inflammations.

Dr. C. E. Fitzgerald was anxious to elicit the opinion of the Society on enucleation. At the International Ophthalmic Congress Dr. Warlomont had brought forward a series of propositions, to which he desired the Congress to subscribe; this was not done, but if the conclusions drawn from such cases as these were correct, then it became a question whether enucleation ought not to be performed in every case of severe injury. He had lately had a severe case of sympathetic ophthalmia forty years after the injury had been inflicted; he enucleated the eye, and found in it the bone cup which he exhibited. The other eye was now the seat of serious sympathetic inflammation. He had found in some recent cases that the globe contained micrococci, which were in greatest number near the wound.

Mr. Critchett said that a comparatively slight injury of one eye might lead to an ophthalmitis of the other, and that occasionally the sympathetically affected eye was lost, while the injured eye recovered; such cases made him hesitate sometimes to advise enucleation. The position of the injury was an important point; if the ciliary region were affected, it was perhaps wise to advise enucleation in all cases; but it was impossible to obtain the consent of a patient and his friends to the enucleation of an eye which still retained normal vision. He had not himself encountered cases where sympathetic ophthalmia came on after enucleation; indeed, he had believed

enucleation was a sure preventive. His experience was against giving mercury in any inflammation not dependent upon syphilis.

Dr. Brailey thought that if we could use the microscope to the living eye we should find that pathological changes were in advance of clinical symptoms ; the cases of delayed outbreak of sympathetic inflammation might be explained by assuming a mild type of disease and a lagging behind of the clinical symptoms. No fixed rule could be laid down with regard to enucleation.

The President said that among the poor, where it was impossible to be sure that directions would be carried out, it was in many cases to the manifest advantage of the patient to remove an eye, which, in a patient where careful nursing was possible, might be saved. In some cases in private practice, he had not removed eyes which had suffered severe wounds, and had been gratified, after a year or more of careful tending and care, by a very complete restitution of vision. It sometimes happened that enucleation though urgently recommended was declined, and that the condemned eye eventually recovered; this showed the need for great caution. Where enucleation had been performed, after-treatment was important; it was desirable to keep the patient under strict regimen for at least two months, until it was evident that the eye could bear the light without distress.

Mr. Adams Frost had given mercury because he had seen it do good in serous iritis.

Bony Tumour of the Conjunctiva.—Mr. Anderson Critchett related the case. The patient was a girl, aged 18. Vision was normal. Midway between the corneo-sclerotic margin and the external canthus was a growth, about the size of a pea; it was slightly movable, and had been noticed three days after birth; it had enlarged rather rapidly during the five years before she came to St. Mary's Hospital. It was embedded in, and adherent to, the subconjunctival tissue, but had no attachment to the sclerotic. Microscopical examination showed large lacunæ, with canaliculi, situated in a homogeneous matrix. Sections were exhibited.

Mr. Spencer Watson had recorded a somewhat similar case in the transactions of the Pathological Society. The

patient was a boy, who had a small tumour at the upper and inner side of the globe. After removal, it turned out to be an ivory exostosis, and a few Haversian canals were seen under the microscope; the tumour was in part cartilaginous.

Mr. Shadford Walker had had a similar case of a bony tumour, which lay under the conjunctiva; it indented, but was not attached to the sclerotic. The patient was a girl, aged 13.

Detachment of the Vitreous Humour.—Mr. Swanzy, related the case of a farmer, whose general health was good, when, in October, 1881, the sight of the left eye rapidly failed, and in a week disappeared. About a week later, the other eye began to fail. On January 10th, 1882, vision in the left eye was reduced to perception of light. Immediately behind the lens, and in contact with it, was an opacity of a greyish colour, which somewhat resembled a detached retina, and was movable only at one small part. Vision in the other eye was good, but the ophthalmoscope showed some small retinal hæmorrhages. It was thought advisable to remove the left eye, and the opacity was then found to be due to a total detachment of the vitreous humour, which lay in contact with the ciliary body and the surface of the lens. The vitreous chamber was filled with a clear fluid; the vitreous membrane contained some blood-corpuscles and pigment.

Primary Tubercle of the Iris.—Mr. Swanzy also related the case of a girl, aged two years, who presented a small white tumour on the surface of the iris; there were also two other minute tumours on the iris. The diagnosis of tubercle was made, and the eye was removed; microscopical examination showed a round-celled growth, with giant-cells, thus confirming the diagnosis. Five months afterwards, the child was still in good health. The family history showed that various members of the family had suffered from tubercular diseases. Mr. Swanzy referred to a case, published by Deutschman, where a child remained in good health six years after the enucleation of an eye in a far more advanced stage of the disease.

Tubercle of the Retina.—Dr. Mules showed drawings and a micro-photograph, from a case of tubercle of the iris, retina, and choroid. The eye was removed; and, on section, the anterior chamber was found to be filled by a mass of tubercle,

which extended back to, and implicated, the base of the ciliary processes. The retina contained two nodules ; at these points, the structure of the retina was almost entirely replaced by the new growth.

Card Specimens :

Mr. J. G. Mackinlay : Total Symblepharon of Lower Lid, cured by Teale's operation, performed six weeks previously.

Mr. McHardy : 1. Transportation of Skin from inner side of arm, to replace skin removed, with an epithelioma, involving the inner third of the lower eyelid : operation, June 1881. 2. Half of a Cataractous Lens, which was absolutely black when removed from the eye of the patient, whose right eye contained a cataract which appeared to be growing black.

Mr. Cowell : New Test Types.

Mr. Anderson Critchett : 1. A case of Nuclear Cataracts, treated by marginal iridectomies. 2. A case of Nuclear Cataracts, in which different modes of operating had been adopted.

Mr. Benson : Drawings of two cases of Rupture of Choroid from external injury.

Dr. A. E. Sansom : Exophthalmos, with none of the Cardiac and Thyroid phenomena of Graves's disease. The patient, a woman aged 41, had steadily improved under treatment, which consisted in the application of the continuous current to the cervical spine, combined with the administration, at various times, of arsenic, ergot, digitalis, and (latterly) iron.

Mr. Juler : Improved Refraction Ophthalmoscope.—The chief novelty was in the attachment of the mirror, which was provided with an universal ball and socket-joint, and could thus be turned in any direction. The instrument is supplied by Mr. Pillischer, of New Bond Street.

Dawson Williams.



RECENT LITERATURE.

A. RETINA. OPTIC NERVE. CENTRES.

- ANGELUCCI. Contribuzione allo studio dell' embolia dell' arteria centrale della retina.
Gazzetta med. di Roma. Anno VIII. Nr. 5.
- ANGELUCCI. Sull' azione della luce e dei colori sull' epitelio retinico.
Gazzetta med. di Roma. Anno VIII.
- ARMAIGNAC. De la cécité des mots.—Observation.
Revue d'oculist. du sud—ouest, 1882, p. 73.
- BAYER. Ueber erworbene Farbenblindheit.
Prager med. Wochenschrift, Nr. 4 & 5.
- BETTMAN, B. The condition of the eyes in two cases of fatal anæmia, an anatomical investigation.
Arch. of Ophth, March, 1882, p. 12.
- BENSON, A. Injury to the eye, causing amaurosis.
Brit. Med. Jour., April, 1882, p. 620.
- BERGER, E. Zur Kenntniss vom feineren Baue des Sehnerven.
Arch. f. Augenhlkde. XI. p. 314.
- CHAUVEL. Des amblyopies traumatiques.
Gaz. hebdom. de méd. Nr. 6, 7.
- COHN, H. Phosphene.
Eulenburg's Real-Encyclopädie d. ges. Heilkde. X. p. 542.
- COHN, H. Ueber Farbenempfindungen bei schwacher künstlicher Beleuchtung.
Arch. f. Augenhlkde. XI. p. 283.
- DONDERS. New researches on the systems of colour-sense Utrecht 1882. Dannenfelser & Co.
- DUMONT-PALLIER. Action du regard ou de la lumière réfléchie des yeux de l'expérimentateur sur les yeux de l'hystérique hypnotisée. (Soc. de biologie. Séance 18 Mars.)
Compt. rend. hebdom. des séances de la soc. de biologie. Nr. 11.

- DRESCHFELD, J. A further contribution on the course of the optic nerve fibres in the brain.
Brain, April, 1882, p. 118.
- FERRIER, D. Glioma of the right optic thalamus and corpora quadrigemina.
Brain, April, 1882, p. 123
- FLEISCHEL, E. VON. Ueber die Theorien der Farbenwahrnehmung.
Wien. med. Jahrb. Jahrg. 1882, p. 73.
Biolog. Centralbl. Jahrg. I.
- GIRAUD-TEULON. Sur les systèmes chromatiques, par M. Donders. Analyse critique (suite et fin).
Ann. d'ocul., 1882, p. 115.
- GIRARD. Les cécités soudaines.
Revue d'oculist. du sud-ouest. III. p. 33.
- HOBBY, C. M. A case of quinine amaurosis manifesting itself primarily in one eye only.
Arch. of Ophth., March, 1882, p. 34.
- HAAB. Ueber Cortex-Hemianopie.
Klin. Mon.—Bl. 1882, p. 141.
- HERSCHEL. Sehnervenentzündung bei constitutionellen Erkrankungen.
Deutsche med. Wochenschr. Nr. 12.
- JANY, L. Ein Fall von rechtsseitiger Hemianopie und Neuroretinitis in Folge eines Gliosarkoms im linken Occipitalappen.
Arch. f. Augenhklde. XI. p. 190.
- JEFFRIES, B. J. Detection of color-blindness.
Med. News, May, 1882, p. 503.
- KNAPP, H. Ueber Chininamaurose; mit drei Fällen.
Arch. f. Augenhklde. XI. p. 156.
- KRAUSE. Anatomische Untersuchungen ueber das Verhalten der Ciliarnerven nach der Neurotomia optico-ciliaris. (Aus Hirschberg's Augenklinik.)
Berliner klin. Wochenschr. Nr. 12.
- KRAUSE. Ueber die anatomischen Veränderungen nach der Neurotomia optico-ciliaris.
Arch. f. Augenhklde. XI. p. 166.
- LITTEN. Ueber die Beziehungen von Lebererkrankungen zu Retinalaffectionen (Berlin, Verein für innere Med. Sitzung vom 20. Febr. 1882.)
Deutsche med. Wochenschr Nr. p. 179
- MICHEL, C. E. Ein Fall von Chinin-Amaurose.
Arch. f. Augenhklde. XI. p. 151.

MORANO. Caso di distacco retinico.

Giorn. delle malattie degli occhi. Anno V. Feb. 1882, p. 33

OLIVER, C. A. Preliminary paper on the determination of a standard of color-sense for reflected color by daylight; with a graphic description of the individual limits and average results of sixteen cases.

Arch. of Ophth., March, 1882, p. 65.

PARINAUD, H. Des rapports croisés et directs des nerfs optiques avec les hémisphères cérébraux.

Compt. rend. hebdom. des séances de la soc. de Biol. Nr. 10.

PFLUGER, E. Weitere Beobachtungen an Farbenblinden.

Arch. f. Augenhkde. XI. p. 1.

PONCET. Rétine tabétique.

Compt. rend. hebdom. des séances de la soc. de biol. Nr. 8.

PONCET. Myxome fasciculé du nerf optique.

Arch. d'ophtalmol. I. Nr. 7. Nov.-Déc. 1881, p. 620.

PONCET. De l'état du nerf optique et de la rétine chez un ataxique aveugle depuis dix ans.

Progrès méd. 25 Febr. Nr. 8

SCHLUETER, F. Ueber Neuritis optica. Inaug-Dissert. Berlin 1882.

SCHUBERT, P. Ueber Farbenempfindung und Farbenblindheit.

Correspondent von und für Deutschland, 1881. Nr.

463, 466, 470, 474, and 481, & 1882. Nr. 111, 117, 126, 137, & 139.

SCHMIDT-RIMPLER. Opticus. (Lex.-Art.)

Eulenburg's Real-Encyclopädie d. ges. Heilkde. X. p. 174.

SHORTEN KRONDHJEM. Amblyopie centrale nicotinique.

Recueil d'ophth., 1882, p. 210.

VIRCHOW, H. Ueber die Glaskörper und Netzhautgefäße des Aales.

Morphol. Jahrb. VII. p. 573.

VOLKELT. Die Farben und die Seele.

Zeitschrift f. Philosophie und philosophische Kritik

79. Heft 1. Leipzig 1881.

WIETHE, Th. Ein Fall von angeborener Difformität der Sehnervenpapille.

Arch. f. Augenhkde. XI. p. 14.

WIETHE, T. A case of congenital deformity of the optic disc.

Translated by W. C. Ayres, M.D., New York.

Arch. of Ophth., March. 1882, p. 70.

WESTRUM, R. Beobachtungen von sogenannter Stauungspapille beim Hunde.

Zeitschr. f. vergleich. Augenheilh. I. p. 37,

B. UVEAL TRACT. VITREOUS AND AQUEOUS. LENS.

BOUCHE. Du glaucôme et de son traitement par la sclérotomie.
Thèse. Paris 1882.

DERBY, H. Three cases of hydrophthalmus treated with
iridectomy.

Arch. of Ophth, March, 1882, p. 51.

EVERSBUSCH, O. Vergleichende Studien über den feineren Bau
der Iris.

Zeitschr. f. vergleich. Augheilk. 1882. 1.

FALCHI, F. Tuberculosi dell'occhio con glaucoma cousecutivo.
Comunicazione preventiva.

Giorn. della R. Accad. di medic. di Torino March
1882.

HARLAN, G. C. Two cases of congenital irideremia, with
lamellar cataract in one and dislocated cataractous lenses
in the other.

Boston Med. and Surg. Journal, April, 1882, p. 368.

HASNER, V. Vorstellung eines primären Sarkoms der Iris.
(Verein deutscher Aerzte in Prag. 3rd Feb.)

Wiener med. Wochenschr. Nr. 6.

HENLE, J. Zur Entwicklungsgeschichte der Krystalllinse und
zur Theilung des Zellkerns.

Arch. f. mikroskop. Anatom. XX. p. 413.

MOYNE. Guarigione della cataratta incipiente.

Bollettino d'oculistica. Anno. IV. Nr. 7. p. 77.

PARINAUD, H. Du glaucoma, sa nature et son traitement.
(Suite et fin.)

Gaz. méd. de Paris. Nr. 9 & Nr. 12.

ROOSA, D. B. ST. J. Senile cataract, inflammatory deposit in
the pupil; corneal section; anæsthetics; date of opening
the eye.

Senile cataract; escape of the lens in its capsule; the
flannel bandage; light in ophthalmic disease.

Senile cataract; delayed union of the corneal flap;
secondary operation failure.

Iridectomy; sympathetic inflammation.

Congenital cataract; good perception of light;
needling; ability to recognise objects.

Traumatic cataract; closed pupil; inflammation of the
vitreous; Loring's method of iridectomy; restora-
tion of vision.

N. Y. Medical Record, April, 1882, p. 458.

THOMPSON, J. L. Extraction of foreign bodies, from the iris.

Arch. of Ophth, March, 1882, p. 41.

VINTSCHGAU, v. Weitere Beobachtungen über die Bewegungen der eigner Iris. (Aus dem physiol. Institut zu Innsbuck.)
Arch. f. d. ges. Physiologie. Bd. 27, p. 194.

VINTSCHGAU, von. Weitere Beobachtungen über die Bewegungen der eigenen Iris.
Arch. f. d. ges. Physiologie. Bd. XXVII. 3 & 4.

VIRCHOW, H. Ueber die Gefässe der Chorioidea des Kaninchens.

Verhandlg. d. physikal-medicin. Ges. zu Würzburg. Neue Folge. XVI. p. 25. 1881.

WHITE, H. W. Case of syphilitic iritis and loss of sight, with an eruption of psoriasis.

Glasgow Med. Jour., May, 1882, p. 379.

WOLFE Leçon clinique sur un cas de tuberculose de l'iris et du corps ciliaire.

Ann. d'ocul. 1882, p. 148.

C. CORNEA. CONJUNCTIVA. SCLERA.

ABADIE. Des ulcères infectieux de la cornée et de leur traitement.

Ann. d'ocul. 1882, p. 143.

DEL TORO. Deux mots sur un nouveau cas de conjonctivite diphthérique.

Revue d'ocul. du sud-ouest, 1882, p. 81.

DUJARDIN. Des exsudats albuminoïdes à la suite des brûlures superficielles de la cornée.

Recueil d'ophth. 1882, p. 204.

GALEZOWSKI. De la Xérophthalmie parenchymateuse et de son traitement par la transplantation de la conjonctive des lapins.

Recueil d'ophth., 1882, p. 193.

GENDRON. Conjonctivite granuleuse. Etiologie et traitement des conjonctivites granuleuse contractées à Cattaro à bord des cuirassés le Sulfren et le Friedland. Thèse. Paris, 1882.

KNAPP, H. On croup of the conjunctiva, with remarks on the treatment of the contagious forms of conjunctival inflammation.

Arch. of Ophth, March, 1882, p. 1.

MORANO. Cheratite suppurativa con perforazione corneale ed ernia dell' iride durante il corso di una polmonite.

Giorn. delle malattie degli occhi, Anno V. Feb., 1882, p. 25.

- MUELLER. Ein statistischer Beitrag zur Blennorrhoea neonatorum aus des Königl. Universitäts-Augenklinik zu Greifswald. Inaug.-Dissert.
- PANAS. Considérations sur la nature et le traitement de la kératite interstitielle diffuse.
Arch. d'ophthalm. I. Nr. 7. Nov. Dec. 1881. p. 578.
- PERRIN. Conjonctivite purulente rhumatismale.
Semaine méd. 19. Jan. Nr. 3.
- SBORDONE. Il ferro rovente nelle ulcere corneali. Clinica oculistica del Prof. del Monte.
Il movimento med-chir. Anno XIII. Fasc. 12. 1881
- SPINA. Ueber Resorption und Secretion. Leipzig 1882.
Cap. XXIII. Untersuchungen des lebenden Hornhaut-epithels.
- WECKER, DE. La cicatrice à filtration.
Ann. d'oculist. 1882, p. 133.
- Inflammation of the eyes in new-born children.
Lancet, May, 1882, p. 767.

D. REFRACTION. ACCOMMODATION. MOTOR APPARATUS.

- AYRES, W. C. The Physiology of accommodation.
N. Y. Med. Jour. May, 1882, p. 484.
- BERLIN, R. Ueber den physikalisch-optischen Bau des Pferdeauges.
Zeitschr. f. vergleich. Augenheilk. 1882, I.
- HIRSCHBERG. Ueber reflectorische Pupillenstarre und genauere Messung der paralytischen Diplopie. (Berliner Gesellschaft f. Psychiatrie. 14. März 1881.)
Arch. f. Psychiat. XII. 2.
- LANDOLT. Etude sur les mouvements de yeux à l'état normal et à l'état pathologique.
Arch. d'ophthalmol. I. Nr. 7. Nov.-Déc. 1881, p. 586.
- MATTHIESSEN. Die zwanzig Cardinalpunkte des menschlichen Auges.
Klin. Mon.-Bl. 1882, p. 154.
- MORANO. Contribuzione alla patigenesi dello strabismo ottico.
Giorn. delle malattie degli occhi. Anno. V. Feb. 1882, p. 30.
- PARENT. Comment sont réfractés les rayons tombant obliquement sur l'oeil.
Recueil d'ophth. 1882, p. 216.
- RAEHLMANN. Ueber die optische Wirkung der hyperbolischen Linsen bei Keratoconus und unregelmässigem Astigma-

tismus, sowie über die Anwendung derselben als Brillen.

Klin. Mon.-Bl. 1882, p. 111.

WOLFSKEHL, P. Ueber Astigmatismus in Thieraugen und die Bedeutung der spaltförmigen Pupille. (Aus dem Laboratorium der Heidelberger Augenklinik).

Zeitschr. f. vergleich. Augenklinik. 1882, Heft. 1. p. 7.

E. EYELIDS. LACHRYMAL APPARATUS. ORBIT.

BAJARDI. Dell' adenite scrofolosa in rapporto con alcune affezioni oculari.

Gazzetta degli Ospedali.

BERGER. Aneurisme arterioso-veineux de l'orbite.

Bullet. et mém. de la soc. de chir. de Paris, VII, 11.

CASPER. Lidabscess in Verbindung mit Zahnwurzelabscess

Centralbl. f. prakt. Augenh. 1882, p. 106.

GERIN-ROZE. Blepharite tuberculeuse. (Société méd. des hôpitaux.

Gaz. méd. de Paris. Nr. 9.

HALL, G. P. A contribution to the study of blepharitis ciliaris from ametropia.

N. Y. Med. Record, April, 1882, p. 399.

HOCK. Orbita. (Lex.-Art.)

Eulenburg's Real-Encyclopädie d. ges. Heilkde. X. p. 193.

MACKENZIE, S. Restoration of the eyelid by transportation of skin from distant parts of the body.

Brit. Med. Jour., April 1882, p. 620.

ORMSBY, L. H. Medullary sarcoma of orbit.

British Med. Jour., April 1882, p. 622.

POWEL, R. D. Clinical remarks on a case of ptosis with pulmonary disease of tubercular (?) origin.

Lancet, May, 1882, p. 723.

F. MISCELLANEOUS.

AYRES, W. C. The development of the eye. II.

N. Y. Med. Jour., May, 1882, p. 458.

CHISHOLM, J. J. Rupture of the eye-ball in its posterior hemisphere from a blow on the face.

Arch. of Ophth., March, 1882, p. 44.

CHISHOLM, J. J. Two cases of malignant tumour of the sphenoidal cavities implicating vision.

Arch. of Ophth., March, 1882, p. 52.

CHISHOLM, J. J. Aphorisms in regard to the treatment of eye diseases.

Med. News, April 1882, p. 471.

FRIESS, DE. Contribution à l'étude des pansements antiseptiques en chirurgie oculaire. Thèse. Paris 1882.

FRONMUELLER. Pilocarpinvergiftung; Atropin als Gegengift, desgleichen Homatropin.

Memorabilien. II. 1. p. 12.

FRÖELICH. Ueber den Polwechsel beim Gebrauch des Electromagneten und über die Magnetsadel als diagnostisches Hilfsmittel.

Klin. Mon.-Bl. 1882, p. 105.

GALEZOWSKI. Cyanure de mercure dans la syphilis oculaire.

Progrès méd. 5. Féb. Nr. 5.

HOTZ, F. C. Serious effect of calomel upon the eye.

Arch. of Ophth. March, 1882, p. 49.

HOLMES AND PARK. A case of severe injury of the orbit.

Arch. of Ophth, March, 1882, p. 58.

MARTIN. Nouvelles applications du fer rouge en chirurgie oculaire et de quelques modifications apportées aux galvanocautères.

Journal de médecine. 14. Jan. Nr. 2.

MAYERHAUSEN. Directe Vererbung von beiderseitigem Microphthalmus.

Centralbl. f. prakt. Augenh. 1882, p. 97.

PONCET. Hygiène des écoles au point de vue de l'organe de la vision.

Revue d'ocul. du sud-ouest. 1882, p. 84.

REICH. Untersuchungen der Augen bei den jungen Officieren im Kaukasus.

Wojenno-Sanitarnoje Djelo. Nr. 2.

SEGGER. Ein doppelröhriges metrisches Optometer.

Ärztliches Intelligenzblatt. Nr. 7.

WEIJDE, VAN DER. Methodisch Onderzoek der Kleurstelsels van Kleurblinden. Proefschrift. (Inaug.-Dissert.) Utrecht-Dannenfelser & Co. 1882.

Medical Society of the State of California. Report of the Committee on Ophthalmology.

Med. News, May, 1882, p. 501.



AN ILLUSTRATION OF HEREDITARY NYSTAGMUS.

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SURGEON TO THE BIRMINGHAM AND MIDLAND EYE HOSPITAL, &c.

These notes are intended as a brief record of a remarkable series of cases of idiopathic nystagmus, the fault being transmitted through four generations. The case also exhibits reversional heredity in an unusual form, *the male children of the females being the subjects of the affection, the females themselves being unaffected*. They also afford important data as to the congenital nature and the duration or persistence of idiopathic nystagmus.

Some years ago a boy, aged 15, was brought under my care at the Eye Hospital in this town, suffering from nystagmus and very faulty vision. The boy was a healthy-looking, well-built lad, having light brown hair, blue-grey irides, and well-shaped head. On examining him I found him to be the subject of a jerking nystagmus, the movements of the eyeballs being wholly horizontal, but markedly strongest in the outward direction. When either eye was excluded the other made wide and very rapid excursions from one side to the other as if in search of clearer vision. There was no point of rest, but the movements were weakest and fewest when the head was leaning a little forward and the object regarded placed downwards and directly in front. The voluntary movements of the eyes were impeded but not arrested. Both eyes were imperfectly developed, the right smaller than the left. He was hypermetropic, but owing to the rapidity and extent of the excursions made by the eyes, no distinct view of the fundus could be obtained. The tint of the

fundus was lighter than is normal even in light-haired people short of albinism. His vision was improved by a +5" glass to No. 6 Snellen. The mother informed me that the jerkings were greatly increased under excitement, and did not cease entirely during sleep. On conversing with the mother she gave me the following remarkable family history, the accuracy of which I have as far as possible tested by visits and personal examination of the sufferers.

I learned that nystagmus had been present in the family for some generations, commencing, so far as proof could be obtained, with the great-grandfather of the little patient. I have embodied the results of my search and enquiries in a tabular pedigree, which is appended to these notes. The great-grandfather was a shoemaker, and in his granddaughter's words, "worked his head and his eyes very badly." He had two brothers, neither of whom were nystagmic, but some of their children suffered from the disease. This line it has been impossible to follow. To return, the next generation consisted of a son and two daughters, none of whom were nystagmic. The children of the son were not nystagmic. One daughter died childless. The other daughter married a man with normal eyes, and of the children of this last marriage four sons are nystagmic, and also the *male* offspring of two daughters. One of the daughters was the mother of my little patient, and she has two other sons who are also the subjects of the fault.

There are *no females* throughout all the generations subjects of the affection.

The only condition common to all those affected is hypermetropia, varying in degree. This, however, exists in some of the females also.

The children of the last generation are certainly lighter in complexion, and in the colour of their hair, than their immediate ancestors, and there is a light tint of the fundus oculi, showing diminished choroidal pigment. They are also more amblyopic than the

earlier generations. None of the family have ever shown any choreic movements. There is no history of gout, rheumatism, or asthma—in fact, excepting the nystagmus, the patients are all in excellent condition.

Important testimony is afforded by this family history as to the question of the first appearance of the movements. It has been said (*Böhm, Faval, Nakonz, Nadand*) that nystagmus is never seen at birth, but is developed later in life in eyes predisposed to its occurrence, from various causes. In the two later generations of this family the nystagmus began at birth, and so anxious are the females of the family on the point that, as one of them said to me, “we always look directly they are born, to see if they work their eyes.” There is another point as to the persistence of the condition which is important. In each case the nystagmus has steadily continued unaltered, or at least, not perceptibly altered, so far as unskilled testimony can show, throughout the whole of life. Notwithstanding this condition, some members have been able to follow trades requiring fair average sight, such as shoemaking and weaving.

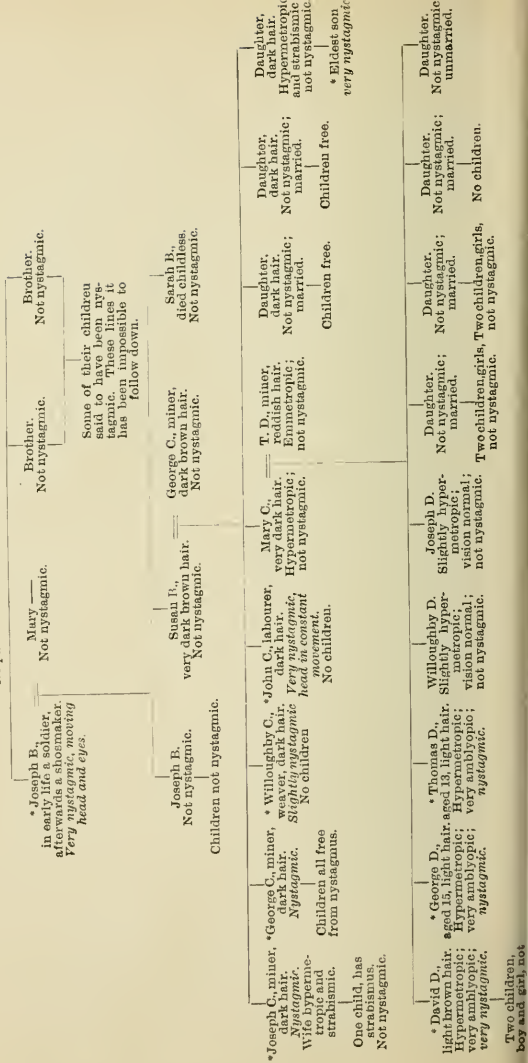
It would be injudicious to attempt any explanation of the hereditary nature of this affection. The absence of pigment cells in the choroid, on which so much stress is laid by some authors, was not evident in the earlier generations, so far as can be discovered. The hypermetropia must, I think, be regarded as a coincidence, rather than a cause. Let the cause of the faulty co-ordination of the associated movements of the eyes be what it may, there is no evidence in the patients themselves of disease or defect in the nervous system, nor of any neurotic tendency.

The tabulated pedigree appears on the following page.

TABULATED PEDIGREE SHOWING INHERITED NYSTAGMUS.

(The asterisks indicate the *nystagmic individuals*.)

No particulars as to earlier ancestry obtainable.



* Eldest son
very nystagmic

MISCELLANEOUS CASES.

UNDER THE CARE OF DR. LITTLE,

MANCHESTER ROYAL EYE INFIRMARY.

REPORTED BY A. HILL GRIFFITH, M.B., HOUSE SURGEON.

REMOVAL OF CHIP OF IRON FROM LENS BY ELECTRO-MAGNET.

The patient was admitted into the Hospital on October 11th, 1881, when a small shining scale of metal could be seen in the deepest layers of the lens of right eye. The lens was nearly all opaque, the accident having occurred seven weeks before, when the man was engaged at his work which is that of a boiler-maker. The eye was quiet, there was one slight iritic adhesion.

The same day, the eye being kept open by speculum and fixed with forceps, the electro-magnet without the needle was applied to the surface of the cornea; the immediate effect of this proceeding was to cause the chip of metal to spring forward against the inner surface of the cornea, and on withdrawal of the magnet to drop into the lower part of the anterior chamber between the iris and the cornea. From this position it was easily removed by making an incision at the outer side of the cornea with a broad needle and inserting the needle of the electro-magnet. A small piece of iris which prolapsed was excised and the lens matter was removed by the suction curette. There was no reaction after the operation, the eye being almost well on the 18th. Without the use of the electro-magnet to bring the chip into the anterior chamber the operation would have been an exceedingly difficult one.

REMOVAL OF CHIP OF STEEL FROM CORNEA BY THE ELECTRO-MAGNET.

In this case the patient before coming to the Hospital had been subjected to several unsuccessful attempts to remove the chip, which had been pushed nearly through the cornea.

Directly the chip was touched with the spud the anterior chamber gave way, the aqueous escaped, and the cornea with the chip in it lay in contact with the anterior capsule of the lens. A roller bandage was at once applied. Two days later, the anterior chamber being re-established, the lids were separated by a speculum, the eye ball fixed with forceps, and the electro-magnet without the needle was applied to the cornea. After two attempts the little piece of steel was found firmly adherent to the magnet. The cornea was observed to take a conical shape from the traction. A bandage was applied, and in a couple of days the patient had quite recovered, the eye looking perfectly quiet.

REMOVAL OF CHIP OF IRON FROM THE IRIS : SIXTEEN YEARS IN THE EYE.

T. C., a mechanic, aged 40, came to the Hospital with a mild attack of iritis in the left eye. There was slight pericorneal injection, a little loss of lustre in the iris, and some pigmentary remains on the capsule of the lens; but the iris was easily dilated with atropine, and vision was perfect. The patient stated that he was struck on the eye 16 years before by a chip of metal, and since then had had frequent attacks of pain in the eye.

On careful examination of the eye there was seen a raised brown nodule the size of a pin's head on the outer and lower quadrant of the iris, midway between the edge of the pupil and the attachment of the iris. There was no scar in the cornea to indicate the point of entrance of the foreign body. Two days after admission, the patient being in the recumbent posture and no anæsthetic being used, the lids were separated by the speculum, the eye fixed with forceps, and a puncture made with a broad cutting needle at the outer edge of the cornea in the sclero-corneal junction. The aqueous was allowed to escape slowly, a pair of fine iris-forceps was introduced, and the foreign body gently laid hold of and carefully extracted from the eye. No prolapse of the iris occurred and there was no hæmorrhage into the anterior chamber. There was no reaction. The patient made a perfect recovery, and left the Hospital in less than a week. He has not presented himself since.

EPITHELIOMA OF CONJUNCTIVA: REMOVAL OF GROWTH TOGETHER WITH EYEBALL: MICROSCOPICAL EXAMINATION.

E. L., a policeman, aged 45 years, was admitted on January 24th, 1882, with a dense nodular growth firmly adherent to lower aspect of the left eyeball, extending forwards a short distance on to the lower part of the cornea and backwards to beyond the reflection of the conjunctiva; the lower lid was not adherent to the growth. The eye was otherwise healthy, and the vision was good. This was the patient's first appearance since July, 1879, when he had a small tumor at the lower sclero-corneal margin which was shortly afterwards completely shaved off by Dr. Little. He was a powerfully-built man, and in good health; he suffered very little pain; the cervical glands of the left side were enlarged.

Some days after admission the patient was put under the influence of chloroform and the eyeball extirpated together with the adherent growth. The hæmorrhage was not excessive, and was easily restrained with cold water. All remains of the tumor were carefully removed from the orbit. The growth was found to extend to midway between the lower corneal margin and the entrance of the optic nerve, its posterior limits being sharply defined; its greatest depth was half an inch. The anterior two-thirds were in direct contact with cornea and sclera, the posterior third being connected to the sclera by loose connective tissue.

Microscopically the tumor proved to be a typical example of epithelioma, being composed of long strands and "nests" and clusters of distinct epithelial cells, and only at the posterior portion showing any quantity of connective and glandular tissue. The cells were remarkably large and well defined, and the greater number of them were of the variety known as "prickle-cells" as found in the Malpighian layer of the skin, indeed more perfect examples of prickle-cells I have never seen. The nuclei stained well with logwood, they were, for the most part, single, except here and there where they showed commencing segmentation into two and in some places into four pieces. This process of segmentation of the nucleus was not accompanied by any corresponding indentation of the cell wall, but the formation of a free space between the nuclei and the cell contents was common.

PERSISTENT HYALOID ARTERIES IN EACH EYE.

J. N., a clerk, aged 44, had acuteness of vision in the right eye equal to $\frac{1}{2}$, when his hypermetropia of $2\frac{1}{2}$ dioptics was corrected; the left eye had normal acuteness of vision, the refraction being emmetropic. In the left, or best eye, there was a long spiral vessel, containing blood, of the diameter of primary branches of the retinal arteries, springing from outside the centre of the optic disc, and running straight forward to nearly the posterior surface of the lens. On closer examination, it was found that there were two trunks, which, springing from the disc, coiled round each other, in regular spirals, forming a closed loop at their free extremity. It had very much the appearance of a miniature umbilical cord, and was quite stationary during movements of the eye. The fundus was otherwise normal.

On the corresponding part of the disc of the right eye, a similar condition was seen, but in a very rudimentary condition, the vessel simply appearing as a little knuckle.

PFLÜGER, (Bern). On the nutrition of the cornea.
Klin. Monatsbl. f. Augenheilkunde, March, 1882.

By means of a new and very delicate method of experimenting Pflüger has obtained what appears to be trustworthy evidence as to the course taken by the lymph-streams which traverse the cornea.

The recently discovered substance Succinyl-fluorescein ($C_{10}H_{12}O_6 + 3HO_2$) has the property of imparting an intense green fluorescence to alkaline solutions even when highly diluted. Pflüger applied a few drops of a $\frac{1}{4}$ per cent. solution to the conjunctival sac of a rabbit, and found that in a few minutes the surface of the cornea acquired a slight but distinct green fluorescence; the intensity of the latter was increased when the cornea was lightly rubbed by means of a finger placed on the upper lid. In order to further promote the imbibition of the fluid he next made some slight scratches in the corneal epithelium, and immediately obtained a deep green coloration, passing in every case from the defect in the epithelium *towards the centre of the cornea*.

When a scratch was made near to and parallel with the corneal margin the coloration proceeded in a radial direction, affecting exactly the corresponding sector, the apex of the colored triangle being at, or a little beyond, the centre of the cornea. When a similar scratch was made midway between centre and periphery the colour passed rapidly along the central portion of the sector as before, while in the centrifugal direction it travelled very slowly and only to a distance of about 1 mm. A round abrasion of the epithelium at the centre of the cornea acquired only a narrow colored border.

Small incisions into the conjunctiva close to the corneal margin, and the same combined with incisions into the subjacent sclera, led in precisely similar manner to coloration of the corresponding segment of the cornea, the situation of the coloration, as regards its depth in the corneal layers, appearing to vary with the depth of the incision.

It was further ascertained by evacuating the anterior chamber with a fine syringe that coincidently with the coloration of the cornea the aqueous fluid acquired a distinct green fluorescence. On the other hand, it was found that when the aqueous fluid was colored by direct injection into the anterior chamber the cornea, several hours later, remained completely free.

From these observations, Pflüger concludes that the cornea receives its nutrient lymph from the vessels of the conjunctiva and sclera; that the streams traverse the cornea in a centripetal direction and meet at the centre; that fluid passes through the cornea in a backward direction, and from it into the anterior chamber; and that no fluid of any appreciable amount passes in the opposite direction, *i.e.*, from the anterior chamber into the cornea.

That the cornea is nourished by the vessels adjacent to its margin has long been accepted as a fact, and it is only lately that some doubt has been thrown upon this matter by certain injection experiments by Kniess, Weiss, and Ulrich, which have been supposed to indicate that the aqueous humour is concerned, to some extent, in the nutrition of the membrane. With regard to these latter, Leber has pointed out the error of confounding *diffusion* with *filtration*; the fact that after injection of a saline solution into the aqueous chamber traces of the salt are discoverable in the corneal tissue, proves only an immigra-

tion of the molecules of the salt, not an infiltration of he aqueous fluid. While not absolutely denying that the cornea may be percolated by aqueous fluid in minute amount, Leber maintains that there is no evidence that such is the case.

After reviewing the opinions of other writers on this question, Pflüger notes the following clinical points :—The damage to the cornea, which accompanies gonorrhœal and diphtheritic conjunctivitis, and burns of the conjunctiva, indicates the dependence of the membrane upon marginal nutrition ; the same is true of the opacities, often leading to sclerosis of the cornea, which occur with scleritis. The fact that atropine introduced into the conjunctival sac finds its way rapidly into the anterior chamber shows that the lymph stream travels from without inwards, and not from within outwards. The early invasion of the iris, and the formation of hypopyon in cases of infective traumatic keratitis point in the same direction ; according to the observation of Horner, the pus traverses the cornea directly from front to back, and enters the chamber by perforating Descemet's membrane. The corneal cedema occurring in glaucoma, which has been recently described by Fuchs (*vide* O.R., page 126), and which is supposed by him to indicate an *outward* percolation, is accounted for more readily by an *inward* stream ; the opacity is most dense at the centre of the cornea, just where the centripetal currents from all parts of the circumference meet together, and where an obstruction to their backward course towards the anterior chamber would be most felt. The opacities, which are set up in Descemet's membrane by contact with foreign bodies, such as a dislocated lens or a detached piece of iris, are perhaps due in like manner to a hindrance of the normal lymph-stream.

In addition to the points bearing upon the nutrition of the cornea, Pflüger notes two other observations which concern the circulation of the intraocular fluids. He found that an injection of fluorescein into the vitreous body caused no coloration of the aqueous humour ; the latter, drawn off by a syringe seven hours after the injection, was perfectly clear and colorless ; he found, further, that six hours after an injection into the anterior chamber, the cornea being still colourless, but the iris deeply stained, a portion of the vitreous drawn off in like manner, showed a distinct coloration. The latter he supposes

to have been due to the travelling of the fluid from the iris to the choroid, and thence, rather by diffusion than by filtration, into the vitreous. The non-coloration of the aqueous after the vitreous injection, leads him to deny that the aqueous fluid can normally come, as some believe, from the vitreous body.

Against this last conclusion of Professor Pflüger's, must be set the results of other recorded injection experiments pointing to the existence of a current of fluid passing from the vitreous through the zonula into the aqueous chamber; as also Deutschmann's observation of the rapid refilling of the aqueous from the vitreous chamber after death, when secretion is no longer possible. It is doubtless incorrect to regard the normal aqueous fluid merely as an overflow from the vitreous, for the ciliary processes present a free surface to the posterior aqueous chamber, while they are separated from the vitreous by the suspensory ligament. The aqueous fluid should rather be described as *a direct secretion from the ciliary processes, supplemented by fluid returning from the vitreous and lens*. This being so, it is not surprising that a discoloration in the vitreous, especially if it be chiefly in the posterior hemisphere, should sometimes be lost in the aqueous chamber, where the waste fluid of the vitreous is diluted by the direct stream from the ciliary processes. Have we not, perhaps, an illustration of this in the very varying degrees to which the aqueous humour participates in hæmorrhagic discoloration of the vitreous body?

H. DERBY, (Boston, U. S. A.) Three cases of Hydrophthalmus treated with Iridectomy. *Archives of Ophthalmology, March, 1882, p. 37.*

The treatment of hydrophthalmus by iridectomy is rarely satisfactory. Few if any successful cases are on record. Derby has, however, obtained results in three cases which show that the prognosis is not entirely bad, and which lead him to dissent from those who abandon the operation altogether. His experience is that iridectomy undertaken at a late stage is liable to be complicated by hæmorrhage and to leave the eye in a state of chronic and painful irritation, but that it may nevertheless arrest the disease, and spread over a series of years vision which was becoming rapidly extinct. Performed in the early stage it may at once stay the disease.

In the first case the failure of vision and distension of the eyes had begun at about eight years of age. At twenty-one, the condition being one of pronounced hydrophthalmus, a broad iridectomy was made on the worse eye—the right. Improvement followed in this eye; deterioration continued in the other. Twelve months later iridectomy was done on the left eye; much hæmorrhage occurred and pain lasted a month or more, but the cornea cleared and vision improved for a year or two. Later, deterioration again set in in both eyes. It appears that the tension was not noticeably reduced by the operations; it remained $T + 2$.

In the second case the patient was one of a family of six boys, and two girls; of these, three boys and one girl suffered from hydrophthalmus. The patient had been affected progressively from birth. At twenty years of age a large iridectomy was made on the right eye; pain and inflammation followed; vision was made neither better nor worse; $T + 2$ remained. Two years later a large iridectomy was done on the left eye; the wound did not close for five days and the eye remained irritable and at times acutely painful for a month. A distinct stoppage of the failure of vision and some temporary improvement followed. Sixteen years later, at thirty-eight years of age, the patient still retained some sight though less than before. He was a person of unusual intelligence and positively attributed benefit to the operation; both his brothers and his sister, similarly affected but not operated on, were blind before they were seventeen years old.

In the third case the patient, a man aged twenty, had been losing sight about three months having been able to teach school up to that time; he had enlarged cornea, and deep anterior chamber in each eye; iridescent vision; excavation of the disc, arterial pulse, and contraction of the visual field in both; tension increased in the right, normal in the left (!) An iridectomy was made on each eye; both healed well without pain. Vision fell off immediately after the operation, then returned in full, and later again slightly diminished. Eleven years later the acuity and the field of vision were found to be unaltered; the disease appeared to have been definitely arrested. The state of tension is not stated. In this case also other members of the family were affected.

ERNST PFLÜGER (Bern). *Method of Testing for Colour Perception.* Bern. Schmid, 1882.

The method adopted by Pflüger for testing the colour sense is based on the well-known phenomenon of simultaneous contrast. His plates consist of a number of differently-coloured sheets (twelve in all) on which are printed, in two different shades of gray, letters varying in size from 35 to 8 mm. Over one-half of each plate is placed one, and over the other half two sheets of white tissue paper, through which the letters appear in the complementary colour to the ground. In the second edition of these plates Pflüger has introduced considerable alterations in the colouring of the backgrounds, as well as in the selection of the shade of the colourless letters.

This method it is supposed will be more easily applied than others by individuals unfamiliar with the physiology of colour vision. We are not prepared to say whether this is the case or not, although personally we have found Holmgren's test a remarkably rapid and certain one. A decided adherence to either of the two prevalent colour hypotheses (which cannot both be right, and are not improbably both wrong) is a questionable advantage in testing. Both theories assume the existence of two forms of colour-blindness, the variations from which are practically, however, not of uncommon occurrence, or, indeed, slight in amount.

The objection of being based entirely on the one hypothesis holds in the case of the test under consideration. But there are other objections to Pflüger's method; the letters are so crowded on the background that the complementary colour does not assert itself very strongly; the letters covered with one layer even, and *a fortiori*, those covered with two, of tissue paper, are many of them too faint; and, lastly, the test is one for central colour vision alone. Perhaps this last is of no practical importance, but it might lead to the assumption of congenital colour-blindness in a case in which there was merely a central scotoma.

The text accompanying the plates is translated into English, French, and Italian. B.

O. HAAB, (Zurich). *Cortex-Hemianopia.* *Klin Monatsbl. f. Augenheilkunde*, May, 1882, p. 141.

Haab records two cases, one observed by Prof. Huguenin, and one by himself, in which homonymous hemianopia was proved

by examination after death to have been caused by lesion in the cortex of the brain. In both cases, the right halves of the retinae were blinded, and in both the lesion was situated in the median surface of the right occipital lobe of the cerebrum close to its posterior limit.

In Huguenin's case, the patient was a girl aged 8. The chief symptoms were dullness of intellect, headache, and irritability; enlargement of the head; vomiting, and later optic neuritis; convulsions, beginning in the facial muscles of both sides, passing to the arms and legs, and followed by unconsciousness for half-an-hour or so; hemianopia (right retinae); no deviation of the eyes, no ptosis, pupils equal and active; no paralysis, no loss of sensation. Diagnosis made during life: hydrocephalus of unknown cause.

After death, two caseous tubercular tumours were found; the first at the apex of the left frontal lobe occupying the bend of the second frontal convolution, and measuring 2.5 cm. long, 1.75 cm. wide, and 1 cm. thick; the second seated directly in the right sulcus hippocampi—in the median surface of the posterior part of the occipital lobe of the cerebrum, and measuring 3 cm. long, 3 cm. high, and 2.5 cm. thick. A comparison with other cases shows that of these two tumours the one situated in the occipital lobe must have been the cause of the hemianopia.

In Haab's own case, the patient was a woman aged 61. After an attack of endocarditis and pericarditis, she suffered from left hemiparesis, which soon passed off, leaving only a very slight weakness of the affected limbs. Left hemianopia—right halves of retinae blind; the line of demarcation vertical and sharp; in the sensitive halves acuity of vision and colour-perception normal. Intelligence good. No motor disturbance beyond the slight weakness in left arm and leg. Sensation, hearing, and smell normal. These conditions remained unchanged until death, a year later, from cardiac disease.

The only lesion discoverable in the brain was a destruction of cortical substance, probably due to embolism, involving the region of the right sulcus hippocampi, extending from the apex of the occipital lobe to a distance of about 6 cm. forwards, and measuring from 2 to 3 cm. vertically. The destruction was almost limited to the cortex, and was separated from the adjacent posterior cornu by a layer of white matter. The optic

thalami, the corpora quadrigemina and geniculata, and the optic tracts were completely intact. Microscopic examination of the tracts, chiasma, and optic nerves revealed no atrophy. Since no lesion was discovered which would account for the paresis of the left extremities, the latter must be attributed to circulatory disturbance in the motor tract of the right hemisphere.

Haab points out that the more exactly the cause of a homonymous hemianopia can be localised in the cortex of one occipital lobe, the more improbable becomes the theory of Charcot and Landolt, which supposes that those portions of the optic nerves which do not decussate at the chiasma cross over deeper in the brain to rejoin the decussating portions, thus affecting, so far as the deeper centres are concerned, a total decussation. The identity of localisation in the two cases he records is striking. Diagrams are given to show the size and exact situation of the lesions.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

THURSDAY, JUNE 8TH, 1882.

W. BOWMAN, F.R.S., President, in the Chair.

DISCUSSION ON SCLEROTOMY.

Reported by DAWSON WILLIAMS, M.D.

The discussion was opened by the reading of the following six papers:—

Mr. Charles Higgins had at one time abandoned the operation of Sclerotomy, owing to the frequency with which it was followed by sympathetic ophthalmia; latterly, operating by de Wecker's method, he obtained fairly satisfactory results. The paper contained notes of eighteen cases, in three of which both eyes were operated on, making a total of twenty-one eyes. A printed table, showing the results of the several cases, as far as they were known, accompanied the paper. He suggested that the operation was indicated in all cases of simple glaucoma, in cases where the pupil was widely dilated, or the iris had undergone changes rendering iridectomy

difficult or impossible. Since writing his paper, two of the cases had returned. In one it had been necessary to perform iridectomy, and in the other the eye had to be excised.

Mr. Spencer Watson made the section by puncture and counterpuncture, making the same incision as for iridectomy. Eserine was used before and after the operation. He regarded a cystoid cicatrix as an essential means of permanent drainage. Sclerotomy was preferable to iridectomy in all cases of eyeball-tension, in which the pupil responded to myotics. It was useful in subacute, acute, and perhaps in chronic cases. Whenever there was a tendency to intra-ocular hæmorrhage, as evidenced by ophthalmoscopic examination, sclerotomy was to be preferred, and whenever the iris was much atrophied. It was not suitable for cases of "glaucoma fulminans," nor for any cases of eyeball-tension in which there was reason to suspect iritic adhesions, or adhesion of the periphery of the iris to the cornea. Several cases were adduced, in which the results of sclerotomy, three, four, and five years after the operation had been noted as satisfactory; and a case of hydrophthalmus in a child of a year old was related, in which sclerotomy and Argyll Robertson's operation had been attended with success in reducing tension. Some cases of failure were also related; the failures being attributed rather to the severity of the cases, and to previous neglect, than to any inherent defect in sclerotomy as a remedy.

Dr. Story read a paper upon the results of thirty-six sclerotomies done in St. Mark's Ophthalmic Hospital, Dublin, upon thirty-two eyeballs suffering from glaucoma. Of these operations, eighteen succeeded in reducing the tension more or less permanently, thirteen failed, and five had no record of the result. In eleven eyes, where the power of counting fingers remained, there was in all an immediate improvement, but in only one was it known to have been permanent. Of four cases where mere perception of light remained, one was benefited permanently, and the other two remained in the same state as before the operation. In six cases of chronic inflammatory glaucoma, one was, two years and a half later, greatly improved; in the other five, there was temporary improvement only. The second eye of the patient who was, as above said, greatly benefited was also operated on, but without any benefit. Three

eyes suffering from traumatic glaucoma were operated on. In one, the cure was believed to be permanent, in one no benefit was received, and in the third case the result was unknown. Sclerotomy had also been performed on both eyes of a child, aged five months, suffering from hydrophthalmus; the result was believed to have been unfavourable. The operation was in all cases, so far as possible, carried out as recommended by de Wecker, and in no case was the sclerotic bridge cut through. Dr. Story's conclusions were that sclerotomy affords a very efficient mode of reducing tension in acute and subacute glaucoma, but that in chronic glaucoma its effects are very doubtful, and in hæmorrhagic glaucoma it does not appear to be of any greater utility than iridectomy. He had observed that when the anterior chamber is evacuated at a time when the iris is under the influence of eserine the pupil dilates as the aqueous escapes, whereas ordinarily, it contracts as the chamber empties itself. He was inclined to attribute this not to a vascular change, but to the elasticity of the iris tissue.

Mr. Bader stated that the object of the operation was to establish a permanent communication between the aqueous chambers and the subconjunctival space. The scleral incision in the operation which he performed included not less than one-fifth of the corneo-scleral circumference, and no scleral bridge was left. The aqueous humour and iris prolapsed through the wound, and gave rise to staphyloma. The after-treatment should tend to encourage the persistence of the staphyloma. In reply to questions, Mr. Bader said that, for the last seven years, he had entirely abandoned iridectomy in glaucoma, in favour of sclerotomy; and that he had never met with a case of sympathetic ophthalmia as a consequence of the operation.

Dr. Swanzy's paper (read by the Secretary) analysed ten cases in which he had performed sclerotomy. Two were unsuccessful, one being a case of hæmorrhagic glaucoma, the other a case of chronic simple glaucoma, where the operation was followed by iritis, owing, he believed, to the use of too much eserine. One case of subacute glaucoma was cured by sclerotomy. Three eyes, in which he had performed sclerotomy for chronic simple glaucoma, early in October, 1879, were examined by him on June 6th, and the tension in all three was found to be still normal, and the vision such as to enable the

patients to engage, the one in the practice of his profession as a medical man, the other in his business as a market gardener. The other cases were also instances of chronic simple glaucoma, and, so long as the patients remained under observation, the results of the operations were maintained. He had met with prolapse of the iris in two cases only, and in each of these the pupil had not been brought to a maximum of myosis by means of eserine. Extreme myosis he believed to be the only certain safeguard against prolapse, and would not perform sclerotomy on an eye in which the pupil was not fully contracted. The operation was performed in the way described by de Wecker.

Mr. Nettleship had performed sclerotomy twenty-three times, using eserine before and after the operation. In several cases, iridectomy had been done once or more before sclerotomy. In all the disease was advanced, and either quite chronic or subacute. The last eight operations had been performed within three or four months from the present date; and the final result had, therefore, not been reached. In the fifteen earlier cases, normal tension was permanently restored and the disease arrested in six, and in all of these the scar was distinctly bulging and dusky ("cystoid"); in the remaining nine, the result was indefinite in some, and decidedly unfavourable in others. (The details of these cases were appended to the paper, but not read.) In all cases, whether successful or not, the degree of bulging of the wound and prolapse of iris were in direct proportion to the increase of tension. The author considered sclerotomy indicated (1) instead of a second iridectomy when a first iridectomy had failed, (2) in all advanced cases where the angle of the anterior chamber was probably permanently closed, (3) in simple chronic glaucoma with good anterior chamber and healthy iris; it was contra-indicated when the anterior chamber was very shallow, even though the iris were healthy and pupil active. He thought it very important to make the incision as far back as possible.

The President said, that since iridectomy, which was, he believed, the best means of dealing with most cases of glaucoma, was not applicable to all, a full discussion of the subject would be of great service if it brought out clearly the cases in which sclerotomy could supply its place. Whatever might be the

ultimate fate of iridectomy and sclerotomy he believed that the use of eserine would never be discarded. With regard to sclerotomy two points especially needed elucidation, viz., the forms and stages of glaucoma in which it was the better operation, and the manner of operating under various circumstances. The anatomical complexity of the structures rendered the subject one of great difficulty, and this was enhanced by our ignorance of the causation of glaucoma, for, in spite of all that had been recently done towards clearing up that point, he still met with many cases in which he felt great doubt as to the mode of origin.

Mr. Critchett said his confidence in iridectomy was not at all shaken, and in cases where there were no contra-indications for it he preferred it to sclerotomy, as doing all that sclerotomy did and something more, because its results were more reliable and lasting. But there were certain classes of cases where iridectomy was contra-indicated. (1.) In cases where the disease was excessively acute, the difficulty and dangers of iridectomy were such, that it might be judicious to perform sclerotomy, at any rate as a preliminary operation. (2.) In hæmorrhagic glaucoma, sclerotomy might perhaps be indicated, though it offered no certainty of success. (3.) In certain rare cases, which he would call "acute simple glaucoma," where the disease commenced with sudden attacks of dimness, or loss of vision, lasting for about ten minutes, and recurring once or twice in the twenty-four hours, tension being very great, and the pupil fixed, but there being no pain, and no "inflammatory" symptoms, iridectomy gave very bad results, and it might be wise to try sclerotomy. (4.) In glaucoma following cataract-extraction he thought that sclerotomy was of more value than iridectomy; it had never yet failed him. In operating he followed the method of de Wecker. He protested against a complete section; it inevitably led to bulging of the ciliary body, which, by keeping up protracted irritation, must conduce to the occurrence of sympathetic ophthalmia.

Mr. Teale said that he had never performed sclerotomy. In traumatic glaucoma, after extraction of cataract, he had for many years done an operation suggested by the President. With a small knife, he punctured the cornea, and pushed on through the posterior capsule into the vitreous body; in two

cases, this had been most successful. Looking back to the time when iridectomy was first making its way against much opposition, it seemed to him that the general success of sclerotomy now was not equal to that of iridectomy then.

Mr. George Lawson thought that sclerotomy was distinctly contra-indicated in hydrophthalmus, and in acute glaucoma, but he had found it to yield excellent results after cataract operations; in cases where the tension became high in the later stages of sympathetic ophthalmia, iridectomy did no good, but sclerotomy relieved pain and tension, even if it did not improve the sight; he had seen it of use in hæmorrhagic glaucoma. He endeavoured to avoid prolapse of the iris, which he considered to be a dangerous accident.

Mr. Prichard in cases where iridectomy was inadmissible, made a vertical section through the corneo-sclerotic junction with a fine knife; prolapse of the iris he regarded as rather advantageous than otherwise, since it rendered the cicatrix less regular and firm. After this operation he had observed, at each subsequent rise of tension, a slight leakage through the scar.

Card specimens:

Mr. Vose Solomon: 1. *Myoma of Ciliary Muscle*; 2. *Melano-sarcoma of Iris*: with microscopical sections of both specimens. (An account of these is given at the end of the report of the sclerotomy discussion.)

Dr. Brailey and Mr. Hartridge: Microscopical Sections of Sclerotomy Scars.

Mr. Nettleship: Microscopical Sections of Sclerotomy Scars.

Patients who had been successfully operated on by sclerotomy were shown by Mr. J. E. Adams and Mr. Bader.

ADJOURNED MEETING.

FRIDAY, JUNE 9TH, 1882.

GEORGE CRITCHETT, Vice-President, in the Chair.

Mr. James Adams had performed sclerotomy only in chronic simple glaucoma with good central acuity of vision, a form of the disease in which a further diminution and deterioration of the field often followed iridectomy. He made puncture and

counter-puncture at 2 mm. from the corneo-sclerotic junction, and cut up for 3 or 4 mm., leaving a bridge, but so nearly cutting through that he could see the edge of his knife. de Wecker now never leaves a case with pupil deformed, but always takes the greatest pains to return the iris if at all prolapsed, and the speaker followed his practice on this point. He did not use eserine before operating, as it rendered the anterior chamber more shallow; his experience of the operation had been satisfactory as a rule; tension was reduced, and vision was not deteriorated; in one case the successful result had now been maintained for a year. If recurrence took place he repeated the operation, either in the same situation or in the opposite direction. In some cases the tension of the eye could be diminished by pressure, and he believed that at each rise of tension some leakage occurred.

Mr. R. Brudenell Carter detailed the cases in which he had performed sclerotomy. He thought that the position and dimensions of the incision were of considerable importance; he entered the knife close in front of the iris, and divided the sclerotic entirely, leaving only the conjunctiva to cover the wound. Large incarcerations of the iris, in traumatic cases, did not, in his experience, cause as much mischief as small ones; but a large staphyloma was an undesirable result of the operation, owing to the astigmatism it produced. He had found the operation of advantage after cataract extraction. He concluded by enquiring whether sclerotomy might not be of use in cases of high progressive myopia, and referred to a somewhat similar operation performed by the late Mr. Hancock in this class of cases.

Dr. Brailey called attention to the anatomical aspect of the matter. He said that de Wecker's incision 1 mm. posterior to the cornea could in strictness scarcely be called a sclerotomy, since the divided tissue was almost entirely corneal, the scleral part forming the undivided bridge. The incision 2 mm. behind the cornea, commonly adopted in this country, though it cut more of the sclera, did not divide the canal of Schlemm and often failed to divide even the ligamentum pectinatum, and this remark applied also to Bader's operation. Since the canal extended less than 0.5 mm. in front of the iris-angle, an incision designed to open it must be made within very narrow

limits and in dangerous proximity to the ciliary body. The reduction of tension which followed each of these operations might be due to (1) temporary evacuation of part of the contents of the globe, or (2) to this combined with filtration, either through the scar, or into the corneo-scleral lymph spaces. The division of scleral veins might also give temporary relief. The atrophy of the ciliary body and iris probably led eventually to a diminished inflow which the remaining channels would be adequate to drain away. The success of Bader's operation might be explained as due partly to the increased elastic area, partly to filtration through the scar; in some scars which he had examined microscopically (the cases were unsuccessful) there had been a retraction of the limiting membrane, which retraction would allow a freer escape of fluid into the lymph spaces of the corneo-scleral region. A small prolapse of the iris was more dangerous and more liable to obstruct the escape of fluid. He would suggest a radial incision from within of the periphery of the external wall of the anterior chamber; this, by dividing the equatorially placed elastic fibres would allow more retraction without risk of prolapse of the iris.

Mr. Priestley Smith, speaking of the *rationale* of these operations, said that whether we cured glaucoma by sclerotomy or by iridectomy we cured it essentially in the same way—viz., by creating a channel for the escape of the pent up fluid. The incision of the sclera was the essential part of the operation, not the excision of the iris, as shown by the following facts: (1.) Glaucoma was characterised by obstruction at the angle of the chamber, and to be successful the incision must pass through this region. (2.) Excision even of a large piece of iris through a corneal wound does not cure. (3.) The scleral incision by itself does affect a complete cure. (4.) Clinical observation showed that variations of tension after operation were intimately connected with variations in the condition of the cicatrix. It was not necessary to suppose that subsequently to the operation the whole of the fluid had to escape through the filtration scar, for in cases which were curable there was no solid adhesion at the angle of the chamber, and the slackening of the globe probably induced a reopening of the angle throughout the entire circle. With regard to Dr. Brailey's suggestion that the fluid might pass through the corneal tissue in a centrifugal

direction, it was to be noticed that Pflüger had recently given an almost conclusive proof that the lymph streams traverse the cornea from periphery to centre and pass backward from the cornea into the anterior chamber.* Schoeler's experiments on rabbits, from which he inferred that the sclerotomy incision in glaucoma retards rather than accelerates filtration of fluid from the anterior chamber, were fallacious, the conditions of the experiments being in no sense analogous to those present in glaucoma.† In spite of Mauthner's recent assertion to the contrary, it was certain that glaucoma was essentially due to pressure, that it was cured by the reduction of tension, and that this reduction was due to restored filtration. With regard to the comparative merits of iridectomy and sclerotomy, the speaker asked those who advocated the latter to state whether they made an equally favourable incision in the two cases. With the lance-shape keratome it was impossible to make the incision as peripheral as with the Graefe knife, and just when the peripheral incision was most important the difficulty was greatest. If the lance knife were used in chronic glaucoma with shallow anterior chamber, the incision will either lie too far forward or the lens will be wounded. He himself had for several years invariably used the Graefe knife in every glaucoma iridectomy, and attached great importance to so doing. Ample proof had now been given that sclerotomy could effect cures in every form of glaucoma; but accurate statistics on a uniform method, and noting both tension and visual results, were wanted before it could be asserted that sclerotomy is superior to iridectomy. The speaker gave it as his impression that iridectomy was slightly more dangerous in some cases with regard to the immediate occurrence of hæmorrhage, but that it afforded on the whole more trustworthy and permanent cures of glaucoma.

Mr. George Cowell had been disappointed with the results obtained by de Wecker's operation, and was in the habit of performing the operation recommended by Mr. Hancock. He did not agree that Hancock's operation was division of the ciliary muscle, but it was a form of sclerotomy, and it certainly relieved tension in certain forms of chronic glaucoma; and he thought it might replace the commoner operations of

* *Vide O. R.*, p. 69. † *Vide O. R.*, 1^o. 216.

sclerotomy. In several cases he had tried a paracentesis of the vitreous chamber, and he had been greatly pleased with his results. With a broad iris knife he made a puncture through the sclerotic very far back between the tendinous expansions of the recti, a little serous fluid escaped and occasionally a portion of the vitreous prolapsed and was snipped off; the anterior chamber was not opened but tension and its accompanying symptoms were relieved by the operation.

Mr. Henry Power was so satisfied with the results of iridectomy that he had not been tempted to make frequent use of sclerotomy, though he had found it successful in some cases, in one case of acute glaucoma, for instance; not more successful, however, than Hancock's operation, which he had frequently performed with advantage. He had recently seen a woman aged 60, upon whom he had operated fifteen years ago or more. She had remained well ever since. Eserine, he regarded as a valuable remedy, and was inclined to question whether some of the results attributed to sclerotomy might not really have been due to the use of eserine; if the pupil responded to eserine he would certainly persevere with its use, and not operate at that time. In hæmorrhagic glaucoma, where iridectomy was impossible, and in the rare cases of glaucoma at about the ages of 15 to 18, where iridectomy did harm, he would certainly give sclerotomy a trial; perhaps also in some cases in young women where it was very important to avoid, if possible, the unsightly appearance produced by an iridectomy.

Mr. J. Cowper said that sclerotomy was advocated on the continent as a substitute for iridectomy because the latter frequently failed, but that was not so in his experience. Again, the two operations were spoken of as essentially different, whereas he considered that they were essentially the same. In performing iridectomy he made the section as far back as possible; he tried to strike Schlemm's canal, and thought that he sometimes succeeded in doing so. He preferred a narrow-angled lance knife.

Mr. McHardy had done de Wecker's operation eleven times; eight of the eyes were blind before the operation, and of these the result was unknown in four, in two pain and tension had ceased, in one iridectomy, and in one enucleation had finally to be performed. In the three other eyes affected with chronic

simple glaucoma, in which vision was retained, tension was at first diminished but recurred and necessitated iridectomy after three, five, and thirteen weeks respectively. He thought sclerotomy ought to be reserved for cases of glaucoma after removal of the lens. He believed that two points were necessary to the success of iridectomy, viz., to make the section far enough back, and to avoid the subsequent use of bandages or compression of the eyes in any form.

Mr. Anderson Critchett thought that sclerotomy was most likely to be of use in hæmorrhagic glaucoma, and in traumatic glaucoma after cataract operations. He operated as de Wecker advised, and included a considerable area of sclerotic. In a man aged 53, both of whose eyes were affected with simple glaucoma to about the same degree, he had done iridectomy on the right, and sclerotomy on the left; after about four months tension had recurred in the sclerotomised eye and he had had to treat it by iridectomy.

The Vice-President observed that the discussion which had been held would have the effect of introducing sclerotomy to general notice, as an element in the treatment of glaucoma which could not be overlooked. Doubtless there were cases where, if sclerotomy were equally effectual with iridectomy, it would be preferable; de Wecker, however, desired more than this; he desired to replace iridectomy by sclerotomy, and seemed to rest his reputation on this one point. For himself, however, he was still inclined to adhere to the opinion that iridectomy gave more permanent results as far, at least, as regards tension.

Card specimens:

Mr. Vose Solomon: 1. *Myoma of Ciliary Muscle*. The patient was a woman aged 22. She had suffered pain in right eye and side of head, and failure of vision for nearly two years. A small, smooth, reddish growth protruded into the anterior chamber at its periphery, separating the iris from its insertion. After excision and section a pale, pinkish, globular tumour, about 15 mm. in average diameter was found springing from the ciliary muscle. It consisted of spindle-cells arranged for the most part in reticulating fibres, and bearing in places much resemblance to the tissue of the normal ciliary muscle. The lens was much distorted by the growth, but remained transparent.

2. *Melano-sarcoma of Iris.* The patient was a woman aged 43. A small speck the size of a pin's head, from which the tumour had developed, had been noticed twenty years ago. The growth was about 2 mm. in greatest width, and extended from the margin of the pupil nearly but not quite to the periphery of the iris, outwards and downwards. The point of special interest was that pigmented cells similar to those of the tumour had infiltrated the tissues at the angle of the anterior chamber throughout the whole of the circle. There was no direct continuity between these and the original mass. They had doubtless been thrown off into the aqueous fluid, carried by it to the filtration-angle, and there arrested. (Drawings of the microscopical appearances, by Mr. Priestley Smith, were exhibited.)

We are asked to state that in the report of Mr. Snell's case at page 226, the words "on the twenty-eighth day" should read "on the third day."

RECENT LITERATURE.

A. RETINA. OPTIC NERVE. CENTRES.

BETTMAN. Der Augenbefund bei zwei Faellen von tödlich verlaufener Anämie. Eine anatomische Untersuchung.
(Aus dem path. Inst. d. Univ. Heidelberg.)

Arch. f. Augenh. XI, p. 28.

COOMES, M. F. Colour-blindness.

Med. News, April, 1882, p. 465.

DENISSENKO. Ueber den Bau der Netzhaut bei der Quappe und bei *Ophidium barbatum*.

von Graefe's Arch., XXVIII 1. p. 125.

FOX, L. W. Examinations of Indians at the Government School in Carlisle, Pa, for acuteness of vision and colour-blindness.

Philadelph. Med. Times, Feb. 1882, p. 346.

FUCHS. Beitrag zu den angeborenen Anomalien des Sehnerven.

von Graefe's Arch. XXVIII, 1. p. 139.

- HAMILTON, A. McL. A case of word-blindness with loss of taste and sense of localization.
N. Y. Med. Record, June, 1882, p. 609.
- MICHEL. Ueber die sogenannte Tagblindheit.
Sitzungsber d. phys.-med. Ges. zu Würzburg, 1881, p. 73.
- PFLÜGER, E. Methode zur Prüfung des Farbensinnes, &c.
Bern. 1882. *J. Dalp'sche Buch-und Kunsthandlung*.
- SAMELSOHN (COLOGN). Zur Anatomie und Nosologie der retrobulbären Neuritis.
von Graefe's Arch. XXVIII, 1, p. 1.
- Double Neuroretinitis. Total loss of vision.
Brit. Med. Jour., April 1882, p. 617.
- B. UVEAL TRACT. VITREOUS AND AQUEOUS. LENS.**
- AEBY. Der Canalis Petiti und die Zonula Zinnii beim Menschen und bei den Wirbelthieren.
von Graefe's Arch. XXVIII, 1, p. 111.
- AYRES, W. C. Beiträge zur Pathologie der sympathischen Entzündung.
Arch. f. Augenh. XI, p. 330.
- BECKER. Zur Anatomie der gesunden und kranken Linse.
Centralbl. f. pr. Augenh., May, 1882, p. 129.
- EALES, H. Syphilitic iritis.
Brit. Med. Jour., May, 1882, p. 781.
- FALCHI, F. Tuberculosi dell' occhio con glaucoma consecutivo. Comunicazione preventiva.
Giorn. della R. Acc. di med. di Torino, March, 1882.
- HARLAN, G. C. Two cases of congenital irideremia, with lamellar cataract in one and dislocated cataractous lenses in the other.
Med. News, April, 1882, p. 415.
- HASNER, VON. Melanosarcoma iridis primarium circumscriptum.
Prager med. Wochenschrift, Nr. 7 & 8.
- HENLE, J. Zur Entwicklungsgeschichte der Krystalllinse und zur Theilung des Zellkerns.
Arch. f. microsc. Anat. XX, p. 413.
- HIGGINS, C. Two cases of disease of the eye, simulating glioma.
Lancet, May, 1882, p. 866.

HIRSCHBERG. Anatomische und praktische Bemerkungen zur Altersstaarauszziehung, Pupillenbildung und Hornhautfärbung.

von Graefe's Arch. XXVIII, 1. p. 245.

KNAPP, H. Bericht über ein siebentes Hundert Staarextractionen. Mit historischen und kritischen Bemerkungen.

Arch. f. Augenh. XI. p. 49.

PARINAUD. Du glaucoma, sa nature et son traitement (Suite & fin).

Gaz. méd. de Paris. Nr. 9 & 12.

PAULSEN. Ueber die Entstehung des Staphyloma posticum chorioideae.

von Graefe's Arch. XXVIII, 1. p. 225.

RUMSCHEWITSCH. Coloboma oculi, Membrana pupillaris persistens, Polycoria.

Centralbl. f. pr. Augenh., May, 1882, p. 138.

RUMSCHEWITSCH. Ein Fall von conservirten Resten der embryonalen Pupillarmembran.

Centralbl. f. pr. Augenh., May, 1882, p. 142.

SNELL, S. On eserine and pilocarpine in glaucoma, and eserine in ocular neuralgia.

Brit. Med. Jour., June, 1882, p. 811.

SNELL, S. Mercury in Sympathetic Ophthalmia.

Brit. Med. Jour., May, 1882, p. 796.

VINTSCHGAU, VON. Weitere Beobachtungen über die Bewegungen der eigenen Iris.

Arch. f. d. ges. Physiol. XXVII, 3 and 4.

C. CORNEA. CONJUNCTIVA. SCLERA.

BELLOURD. Kératite professionnelle, incrustations plombiques de la cornée.

Arch. d'Ophth. II. p. 1.

COLSMANN. Ein Fall von recidivirender Hornhauterkrankung bei gonorrhöischer Gelenkentzündung.

Berl. Klin. Wochensch., April 17, 1882.

DANESI, G. Un caso di sclero-coroidite anteriore con stafilomi terminato assai felicemente.

Bolletino d'oculistica, Anno IV, Nr. 8, p. 93.

DENTI, F. Di un singolare fenomeno patologico di circolazione della cornea.

Bolletino d'oculistica, Anno IV, Nr. 8, p. 90.

- HASNER, VON. Ankyloblepharon filiforme adnatum.
Zeitschrift für Heilkunde, 11, 6.
- HODGSON, A. Small-pox pustule on the cornea.
Lancet, May, 1882, p. 897.
- KRAUSE. Die Mikrokokken der Blenorrhoea neonatorum.
Centralbl. f. pr. Augenh., May, 1882, p. 134.
- LANGE. Jodoform bei Blenorrhoea neonatorum.
St. Petersburger med. Woch, 1882, Nr. 10.
- REICH. Ueber Conjunctivalveränderung durch Pemphigus.
Centralbl. f. pr. Augenh., May, 1882, p. 145.
- SCHIRMER, G. Die Augenentzündung der Neugeborenen.
(Aus der geburtsh. Klinik zu Erlangen.)
Centralbl. f. Gynaek, Nr. 13.
- Purulent infantile ophthalmia.
N. Y. Med. Record, June, 1882, p. 614.

D. REFRACTION. ACCOMMODATION. MOTOR APPARATUS.

- BOUCHERON. De la cure du strabisme convergent intermittent par les mydriatiques ou les myotiques.
Arch. d'Ophth. 11, p. 47.
- BUZZARD, T. On Ophthalmoplegia externa, in conjunction with tabes dorsalis, with some remarks on gastric crises.
Brain, April, 1882, p. 34.
- EMMERT, E. Die Grösse des Gesichtsfeldes in Beziehung zur Accommodation.
Arch. f. Augenh. XI, p. 303.
- HARLAN, G. C. Cases of unusually high degree of accommodative spasm; Myopia simulated by hypermetropic eyes.
Med. News, May, 1882, p. 487.
- MAGNUS. Die Kurzsichtigkeit.
Deutsche Revue, April, 1882.
- OGLESBY, R. P. Miner's Nystagmus.
Brit. Med. Jour., May, 1882, p. 805.
- REYNOLDS, D. S. Spectacle Lenses.
Med. News, April, 1882, p. 468.
- Myopia in France.
Brit. Med. Jour., May, 1882, p. 755.
- Short-sight, a fashion.
Med. Times and Gaz., April, 1882, p. 460.

E. EYELIDS. LACHRYMAL APPARATUS. ORBIT.

- BENSON, A. H. Restoration of the eyelid by transportation of skin from distant parts of the body.
Medical Press, April, 1882, p. 353.
- GALEZOWSKI. Des affections scrofuleuses de l'oeil et de l'orbite.
Journ. de théér, Nr. 3.
- HULKE, J. W. Osteoma of orbit.
The Lancet, June, 1882, p. 910.
- LIPPINCOTT. Abscess of the orbit.
N. Y. Med. Record, May, 1882, p. 550.
- TEILLAIS. Éléphantiasis des paupières.
Arch. d'Ophth. II, p. 42.
- WHITE, J. A. Tumour of lachrymal gland.
Arch. f. Ophth., March, 1882, p. 62.

F. MISCELLANEOUS.

- ADAMUK, E. Einige Beobachtungen über Geschwülste des Auges.
Arch. f. Augenh. XI, p. 19.
- ALBINI E D'ANGELO. Simulata cecità monoculare.
Morgagni. January, 1882.
- AYRES, W. C. Beiträge zur Kenntniss der Neubildungen im Auge.
Arch. f. Augenh. XI, p. 323.
- BAUDRY, S. Sur l'emploi du prisme comme moyen de dévoiler la simulation de la cecité unilaterale.
Arch. d'Ophth. II, p. 10.
- BROWNING, W. Ein binoculares Ophthalmotrop.
Arch. f. Augenh. XI, p. 69.
- COHN, H. Augenkrankheiten bei Masturbanten.
Arch. f. Augenh. XI, p. 198.
- DEUTSCHMANN. Einige Erfahrungen über die Verwendung des Jodoforms in der Augenheilkunde.
von Graefe's Arch. XXVIII, 1. p. 214.
- DOLMBERG. Resultate der Behandlung mit Eserin im St. Petersburger Augenhospital.
Wratsch. Nr. 4 and 5.

- EMMERT, E. Hyoscinum hydrojodatum.
Arch. f. Augenh. XI, p. 183.
- FORBES, LITTON. Eine neue Form des schematischen Auges.
Arch. f. Augenh. XI, p. 328.
- GALEZOWSKI. Des injections hypodermiques.—Le cyanure de mercure dans la syphilis oculaire.
Progrès méd. 15th April, 1882, p. 279.
- GAMA PINTO, DA. Anatomische Untersuchung eines nach Critchett's Methode wegen Hornhautstaphyloms operirten Auges.
von Graefe's Arch. XXVIII, 1, p. 170.
- GODNEW. Ueber den Einfluss des Sonnenlichts auf die Thiere.
Tagblatt der Ges. Kasan'scher Aerzte, Nr. 1 and 2.
- GOLDZIEHER, W. Perimetrie.
Eulenburg's Real Encycl. d. ges. Heilk. X, p. 476.
- GRAEFE, ALFRED. Epikritische Bemerkungen über Cysticercus-Operationen und Beschreibung eines Localisirungsophthalmoscops.
von Graefe's Arch. XXVIII, 1, p. 187.
- GRUENING, E. Ein Fall von Chininblindheit.
Arch. f. Augenh. XI, p. 145.
- JACOBI. Albinismus facialis acquisitus.
N. Y. Med. Record, May, 1882, p. 583.
- KAISER, H. Association der Worte mit Farben.
Arch. f. Augenh. XI, p. 96.
- KNAPP, H. Bericht über die augenärztliche Abtheilung des zu London vom 3. bis 9. August, 1881, abgehaltenen internationalen medicinischen Congresses.
Arch. f. Augenh. XI, p. 74.
- KNAPP, H. Bericht über die augenärztliche Versammlung in Heidelberg vom 14. und 15. September, 1881.
Arch. f. Augenh. XI, p. 93.
- LEROY. Optique physiologique. Vision centrale, irradiation et acuité visuelle.
Arch. d'Ophth. XI, p. 22.
- LITTLE, W. S. Subjective tranmatism of the eye.
N. Y. Med. Record, May, 1882, p. 550.
- MAGNUS. Der Einfluss der Arbeit auf das menschliche Auge.
Humboldt, 1882, April.
- MAKUNA, M. D. Variolous affections of the eye; their pathology and treatment.
Brit. Med. Jour., June, 1882, p. 812.

- MARCHI. Ueber die Terminalorgane der Nerven (Golgi's Nervenkörperchen) in den Sehnen der Augenmuskeln. Histologische Arbeit aus dem Laboratorium der ophthalmologischen Klinik der Königl. Universität zu Modena. *von Graefe's Arch. XXVIII*, 1. p. 203.
- MOOREN. Fünf Lustren ophthalmologischer Wirksamkeit. *Wiesbaden*, 1882, *J. F. Bergmann*.
- NICATI. Remarques au sujet des conditions de vue exigées pour le service militaire. *Arch. d'Ophth. II*, p. 65.
- NIEDEN. Schriftproben, 1882.
- NEIDEN. Berichtigung. *von Graefe's Arch. XXVIII*, 1. p. 275.
- OPPENHEIMER. Foreign body carried in the eye without discomfort. *N. Y. Med. Record*, 1882, p. 583.
- RITTER. Das Auge eines Acranius histologisch untersucht. *Arch. f. Augenh XI*, p. 215.
- SCHTSCHASTNEY. Die Augenerkrankungen im 44. Reservebataillon in Kiew. *Wojenno-Sanitarnoje Djelo*, Nr. 8.
- SCHTSCHASTNEY. Aus Anlass der Augenkrankheiten und des Scorbutus beim Militair. *Wojenno-Sanitarnoje Djelo*, Nr. 5.
- SCHUBERT. Ein Wort zur Schulbankfrage. *Baier. aerztl. Intelligenzbl. XXVIII*.
- VIRCHOW, HANS. Ueber Fischaugen. *Sitzungsber d. phys.-med. Ges. zu Würzburg*, 1881, p. 108.
- Brooklyn Eye and Ear Hospital. *Med. News*, April, 1882, p. 420.
- Cork Ophthalmic and Aural Hospital. *Brit. Med. Jour.*, June, 1882, p. 839.
- The Bradford Eye and Ear Hospital. *Lancet*, May, 1882, p. 896.

THREE CASES OF PURULENT OPHTHALMIA RAPIDLY CURED BY IODOFORM.

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On receipt of the April number of the Ophthalmic Review in May, I employed the Iodoform treatment in the three first cases which came under my charge with excellent results, and as this method of treatment seems likely to prove of permanent value, I send you the cases for publication.

Case I. F. S., aged one month, a Mahommedan infant, was admitted into the Out-patient Department of the Bombay Ophthalmic Hospital on May 10th, on account of ophthalmia neonatorum. The disease commenced a few days after her birth, and had gone on increasing in severity until admission. On admission, the lids of both eyes were much swollen, distended and baggy, and the edges were gummed together. On separating them a considerable quantity of pus welled out and ran over each cheek. There was much redness and chemosis, but the corneæ were sound. I applied a weak solution of nitrate of silver, and gave the attendant a solution of alum, to be applied every hour during the day, and every two hours at night, with strict injunctions as to cleanliness. Next morning there was no apparent improvement, and I then employed Iodoform. This was dusted freely over the everted lids. On the 12th the lids were gummed together as usual, but on separating them there was scarcely a trace of discharge, not more than what is often found in catarrhal conjunctivitis. I treated the case with Iodoform only, and cleanliness, until the 16th, when the discharge had, practically, entirely ceased, and nothing remained but some redness and thickening of the

conjunctiva, for which a simple astringent was sufficient. The case did well from the day Iodoform was applied, and in less than a month had ceased attending the hospital.

Case II. C. D., aged 23, a Goanese cook, was admitted on May 10th, on account of gonorrhœal ophthalmia of the right eye. He had urethral gonorrhœa for fourteen days, and gonorrhœal ophthalmia for six days before admission. The lids were swollen, there was great congestion and considerable chemosis of the conjunctiva. There was an ulcer at the upper edge of the cornea about the size of a grain of rice, having the appearance of having been scooped out by the finger nail. There was much purulent discharge and pain. The lids were everted, and Iodoform was dusted over the conjunctiva. On the 11th the discharge and swelling were much less, and the patient felt much relieved. On the 12th the discharge had almost disappeared, and I gave the patient a solution of alum, gr. iij. to aqua 1oz., for home treatment. He returned on the 18th, with the eye almost well of the conjunctivitis, but the ulcer still remained. Since then all the conjunctival symptoms have disappeared, and at this date—June 5th—he remains under treatment for the corneal ulcer, which has now almost healed.

Case III. G. B., Hindoo male, aged 19, applied to the hospital on May 9th, on account of purulent ophthalmia. He denied having had gonorrhœa. The lids were swollen, there was much chemosis and discharge, but the cornea was healthy. Iodoform was dusted into the eye, and on the 11th and 12th it was noted that the swelling and discharge were very much less. On the 12th I gave him some solution of alum for home treatment, and he did not return.

The greatest difficulty I have had in treating purulent ophthalmias of all sorts among the natives of India is the impossibility of getting them to keep the eyes clean. The pus will be allowed to collect for hours about the eyes of babies, however strict the injunctions may be as to cleanliness. As this remedy at once stops the discharge, it obviates the necessity for the great cleanliness ordinarily required, and admirably suits the class of patients usually met with in India,

GLAUCOMA FOLLOWING A BLOW ON THE EYE : PATHOLOGY.

BY PRIESTLEY SMITH.

The more the microscope is brought to bear upon the question of the causes of glaucoma, the more confident becomes the expectation that in each succeeding specimen which is examined changes will be found which have, in one way or another, obstructed the escape of fluid from the eye. So invariably, hitherto, have my own observations pointed in this direction, that they seem to me to justify the assumption that in *every* case of excessive tension there exists some change obstructive to filtration. This is, however, not yet a proven fact, it is only a probability; and it remains a matter of great interest and importance to ascertain for the more exceptional forms of the disease whether such changes are present in them also; in what way, if in any, they differ from those commonly met with; and what light they can throw upon first causes—for it is not enough to recognise the presence of these obstructions, we want to know, for each variety of glaucoma, exactly how they come about.

One such exceptional case I published in the Ophthalmic Review for June; the present paper records another—a case in which an attack almost precisely resembling acute primary glaucoma was induced by a blow upon the eye—and I propose subsequently to add cases illustrating some further varieties of the disease, the great importance and interest of all glaucomatous conditions being, I think, a sufficient excuse for so frequent a recurrence to the subject.

Ann T., aged 57, married, was brought to the hospital by her daughter on November 18th, 1881 (I 572). She stated

that nine weeks previously her right eye had been struck violently by a cork escaping from a soda-water bottle. Great pain had followed immediately, with much impairment of sight; within fourteen days of the accident the eye had become entirely blind. She had been treated at home with leeches, hot fomentations, and other local applications, but had got no relief; the eye had remained constantly painful; she had lost appetite and strength, and had been obliged to take "sedative pills" every day since the accident.

Condition on admission.—Patient is stout, anæmic, short of breath; liable to bronchitis; highly nervous and emotional, being reduced by pain; she complains of great pain in right eye and head.

Right eye: In a condition of acute glaucoma, absolute; $T + 2$ or 3 ; $V = 0$; great scleral injection; cornea slightly cloudy; anterior chamber very shallow; pupil moderately dilated, and fixed; no reflex obtainable from fundus.

Left eye: $H = \frac{1}{16}$; $V = \frac{20}{30}$; Tn ; media clear; fundus healthy.

Eserine drops applied during three successive days, and morphia at night, failed to effect any discoverable reduction of tension; the size of the pupil was slightly diminished by the eserine, but no marked contraction was obtained. The pain continued very severe. On being then assured that removal of the eye was the only certain means of permanent relief from the pain the patient consented to excision.

Examination of specimen.—The eye is of hypermetropic build; it is smaller in the antero-posterior than in the transverse diameter, and below the average size in both, and the ciliary muscle shows a large proportion of circular fibres as compared with longitudinal.

The ciliary processes are enlarged, and are applied to the posterior surface of the iris. The periphery of the iris is in contact with and slightly adherent to the opposing surface of the ligamentum pectinatum and cornea, the adhesion extending at some parts of the circle to a distance of 1 mm. in advance of Schlemm's canal, at others not so far. The ciliary muscle is perhaps somewhat atrophied.

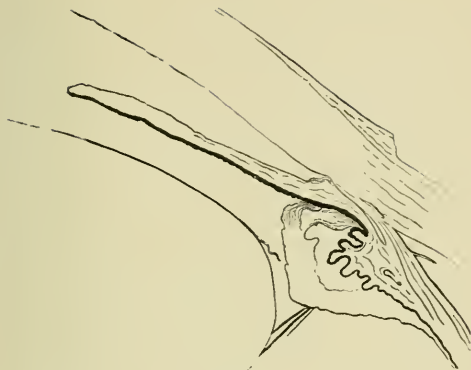


Fig. 1.
MAGNIFIED 15 DIAMETERS.

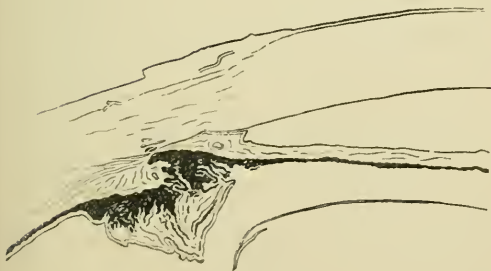


Fig. 2.
MAGNIFIED 15 DIAMETERS.

The lens hangs, in the divided eyeball, a little away from the iris, and is not in contact with the processes; by pushing it a little forwards it is readily applied to the posterior surface of the iris, and it then fits accurately to the outline of the ciliary processes; it may conveniently be retained in this position during examination by placing a large glass bead in the vitreous space and letting it bear lightly against its posterior surface.

Figure 1 was drawn with the microscope-mirror from the divided eyeball as it lay in chloral-solution; the lens is shown in the position which it there assumed; its position previous to excision is indicated by the position of the iris. Figure 2 was drawn from a thin section; the hemisphere from which it was cut had previously been mounted in glycerine-jelly, and in this section a portion of the lens happened to be retained in position by a film of the jelly. Both figures were reduced from the original mirror-drawings by photography.

On viewing the ciliary region from within, a coredialysis 6 mm. in length is seen, the iris being to this extent torn very cleanly away from its insertion. (This lesion had not been suspected previous to excision, for at the time of the examination there was no noticeable deformity of the pupil, and no blood in the anterior chamber.) In sections cut from this part of the circle the ciliary muscle and processes have very little attachment to the sclera, and cannot be kept *in situ*, but there is an indentation in the region of Schlemm's canal, which seems to show that where the iris was missing the processes themselves were pressed forward against the wall of the chamber. There is no trace of extravasated blood in the neighbourhood of the coredialysis or elsewhere within the eye.

In figure 2 a peculiar bend or notch is seen at the point where the peripheral adhesion of the iris ceases. In some sections adjacent to this one the notch is deeper and the angle still more acute. It probably has the following significance. Some movement of the iris tissue in the direction of the periphery must have occurred after the adhesion had formed; by traction in this direction the non-adherent posterior surface would be drawn outwards, while the anterior surface being unable to follow it would be doubled upon itself at the point where the adhesion begins. It is not unlikely that this happened at the moment of excision; the swollen processes disgorging

themselves of some of their blood through the divided veins would at that moment relax their grip upon the iris, and the latter might be drawn into the extra space thus created. Dr. Story has lately noted* that the pupil of the glaucomatous eye, if under eserine at the time of operation, frequently dilates somewhat as the aqueous escapes from the chamber. Eserine had been used to this eye during two days previous to its excision.

The optic disc in section shows commencing excavation; the lamina cribrosa is pushed back and the surface of the disc is depressed to the level of the sclera.

A blow upon the eye may induce glaucoma in more ways than one. It may do it by dislocating the lens in one case, by causing an intra-ocular hæmorrhage in another. In the present instance the pathological changes are, for the most part, those which are found in acute primary glaucoma, and the process by which they were set up was, doubtless, to a great extent the same.

The iris has manifestly been driven forward and its periphery pressed against the cornea by the processes, so as to close the angle of the anterior chamber, and cut off all access to Schlemm's canal. It appears likely that the blow, the violent effect of which upon the ciliary structures is indicated by the partial detachment of the iris, caused a vaso-motor paralysis, and hence a congestion and swelling of the processes, and that this swelling closed the outlet of the anterior chamber in the way just described, and established the glaucoma. The excessive pressure thus induced within the eye would aggravate the turgescence of the processes, and so intensify the blockade.

Hypothetically it may be suggested that vaso-motor paralysis and arterial dilatation induced by a blow would lead to hyper-secretion into the chambers of the eye, and would in this way induce a glaucomatous tension, but as a matter of fact a subnormal rather than an excessive tension appears usually to accompany the symptoms which point to vaso-motor paralysis, viz.: Injection of the external vessels, some diminution of the

* Ophthalmological Society. *Vide* O.R., July, p. 255.

size of the pupil, and some loss of its response to atropine; it is stated, moreover, that in the eyes of rabbits a fall of tension follows the infliction of slight contusions.* It would be unsafe, therefore, to attribute to hyper-secretion any share in the production of high tension in cases like the present.

What then was the reason that a vascular change, which is sometimes associated with a subnormal tension, served in this case to initiate a glaucoma? I believe that here, as in several other varieties of the disease, the predisposing factor was the close proximity between processes and lens, which is proper to the senile eye. Had the swelling of the processes been of less amount, or had it not been limited in the direction inwards by the margin of the lens, it would have taken less effect anteriorly, and might have spared the angle of the chamber. This idea has a complete counterpart in the well-known fact that the lens of the child and young adult may be pricked with the needle and allowed to swell up within its capsule with comparative impunity, whereas a similar swelling of the larger lens of the senile eye will almost certainly induce glaucoma.

The only difficulty in accepting this as a complete explanation of the case in question, and of primary glaucoma in general, is, as I have pointed out elsewhere, that it fails to account for the shallowness of the anterior chamber, *i.e.*, for the advance of the lens. The relation of the lens, and its suspensory ligament to the processes, is such that swelling of the latter must inevitably tend, *per se*, to displace the lens backwards, whereas every operator knows that in primary glaucoma the lens and iris tend to approach unduly near to the cornea, and dissection confirms the fact. In the present instance, as in many others, the lens has receded since the opening of the eye, and now lies at some little distance from the iris; but no such interval between these structures ever exists previous to excision in uncomplicated cases of glaucoma; the retrocession of the lens

* Graefe-Saemisch, Vol. II., p. 379.

testifies to its former advancement under pressure and to the elasticity of its suspensory ligament. The conclusion is inevitable that, together with a general rise of pressure within the eye, there usually arises an excess of vitreous pressure over aqueous pressure ; or, in other words, that the abnormal accumulation of fluid occurs in the vitreous and not in the aqueous chamber. If, therefore, in the case now before us, the swollen state of the ciliary processes is to be accepted as the essential cause of the glaucoma, it must be reconciled with the overfulness of the vitreous chamber, and this in face of the fact that the processes lie *in front* of the suspensory ligament.

We know almost as a matter of certainty that the vitreous receives its nutrient supply from the ciliary processes. It seems likely that when the processes are greatly swollen up and pressed against the iris (and lens), as seen in figures 1 and 2, they may unload themselves in disproportionate amount through their vitreous surface, and certainly the compression of the circumlental space must tend to check the return of the fluid from the vitreous to the aqueous chamber ; thus a condition amounting to an œdema of the vitreous body might be set up. This point is reserved, however, for fuller examination in connection with the whole question of changes in the relative sizes of aqueous and vitreous chambers in glaucoma.

With regard to the question of treatment, it is interesting to note that it would have been impossible in this case to effect an iridectomy or sclerotomy incision through Schlemm's canal without freely incising the base of the iris. The free arterial hæmorrhage into the anterior chamber which sometimes immediately follows the incision in acute glaucoma doubtless proceeds from the vessels of the iris. It is possible that eserine might have succeeded in unlocking the angle of the chamber if it had been employed at an earlier stage of the disease, before the compression of the iris had become so extreme, and while the sphincter of the pupil still retained its contractile power.

E. G. LORING (New York.) A new nervous connection between Intra-Cranial Disease and Choked Disc. *New York Med. Journal*, June, 1882, p. 561.

Loring argues that the trigeminal nerve affords the channels through which disease in the brain is able to set up inflammation in the optic disc.

Clinical experience shows that distant peripheral irritations of the fifth pair may cause grave ocular troubles. Thus, tumours or disease of either the upper or lower jaw, or even irritation from defective teeth, may produce not only conjunctival injection with hyperæmia of the iris, but also a grave deterioration of vision, and this latter oftentimes with no disturbance of the eye which is outwardly visible. Moreover, this amblyopia may affect not only the eye of the side on which the irritating focus is situated, but also the other eye as well. That these troubles are due to nerve irritation is proved by the fact that when the cause of the irritation is removed the ocular trouble ceases, and the vision may be either partially or entirely restored. Seeing, then, that the eye may suffer from peripheral irritations of the fifth, even when the irritation is applied to portions of the nerve which have no direct communication with it, it should suffer in a more marked manner, and in a more pronounced degree, when the nerves which are distributed to the eye itself are involved. Are there any fibres within the head capable of producing such a result?

The ophthalmic branch of the fifth pair, just before it leaves the head, sends back a recurrent branch, which, after ramifying over the entire surface of the tentorium, passes on to the various sinuses. The external branches, or those farthest from the median line, go to the superior petrosal sinus, and then to the lateral sinus, as far back as its junction with the longitudinal sinus at the torcular, where they meet the fibres from the opposite side. The more central filaments are distributed to the venæ Galeni, and have been traced some way up the falx. They are also distributed to the walls of the straight sinus, while still other filaments pass down to the transverse sinus. The entire cerebellum also is inclosed in every direction, nearly down to the occipital foramen, with similar filaments. Thus all the principal sinuses and veins of the centre and base of the

head are supplied by this nerve, and it well deserves the name given it by Luschka of the sinus-nerve.

It follows from this wide distribution of the nerve that distention of the brain in any direction, whether upward, downward, or sideways, must act upon some of its filaments. These filaments, being centripetal, would convey the irritation backward to the Casserian ganglion, or even to the centres of the fifth pair. From thence the irritation would be carried outward on the centrifugal fibres to the ciliary ganglion, and thence through the ciliary nerves to the posterior parts of the eye and optic nerve. The external sheath of the optic nerve is richer than that of any other nerve in the body in *nervi nervorum*, from the ciliary nerves (Sappey), and other filaments pierce the nerve trunk and accompany the central vessels (Krause.)

Bernard, Brown-Séquard, and Vulpian have long ago shown that excitation of sensory nerves can determine, locally or at a distance, vaso-motor troubles of great intensity; and Duret asserts that the nerves of the dura mater, which are branches of the trigeminus and are centripetal nerves, have analogous properties as conductors, and that irritations, whether mechanical or chemical, of these nerves excite intense vascular disturbance in both eyes and in both hemispheres, the effect taking place first on the injured side, and a little later on the opposite side. These facts not only offer the first rational and physiological explanation of how a bilateral neuritis can be produced from a one-sided lesion, but also a very strong argument to show that it is over the nerves of the dura mater and its folds that the irritation is conveyed.

It is certainly strange that the effect should be limited, at least in its beginning, to so circumscribed a region as the optic papilla, but it must be remembered that the ciliary nerves are not all delivered to the same antero-posterior plane; some are distributed to the cornea, others to the iris, some to the ciliary muscle, and others successively to the posterior parts of the choroid, the optic nerve, and its sheaths, and we have examples of disturbance limited to a single one of these regions; thus we may have a paralysis of fibres going to the iris, while the accommodation remains unaffected, or a paralysis of the accommodation and none of the iris. That there are different centres corresponding to these different sets of fibres is thus proved for

the anterior parts of the eye, and there is no reason why there should not be the same for the fibres going to the posterior parts. There is no reason, in other words, why the centripetal fibres of the recurrent ophthalmic should not have their analogue in a set of centrifugal fibres which are distributed to the optic-nerve disc and the neighbouring retina.

THEODORE KUBLI (Dorpat). The clinical significance of the so-called Amyloid Tumours of the Conjunctiva, with a report of three new cases. (Translated by J. A. SPALDING.) *Archives of Ophthalmology*, June, 1882, p. 149.

The recorded examples of so-called amyloid tumours of the conjunctiva, as collated by Kubli, are now thirty in number, not including one published by Prout and Bull (*Arch. of Ophth.* Vol. viii., p. 73), which is not mentioned in this list. The following is a summary of the chief facts which have been made out in connection with these growths.

The disease has been met with in persons varying from 13 to 55 years of age, but is most frequent between 20 and 35. It has no distinct connection with any particular constitutional disorder; in some cases the general health has been good, while in others anæmia, swelling of lymphatic glands, and syphilis have been noted. It begins insidiously, and without any inflammatory symptoms, and usually develops in a very slow and gradual manner—though occasionally the enlargement is more rapid. In about two-thirds of the cases one eye only was affected, in the remainder both. Of the thirty cases, seventeen were observed in men, thirteen in women.

Histologically, the amyloid tumour originates as a diffuse adenoid proliferation in the subconjunctival tissue, the tissue of which the growth is composed in its first stage being the same in character as that of tumours of lymph-glands or lymphomata. The proliferation is at first usually diffuse, so that the new formation is not sharply defined from the neighbouring tissues; its most prevalent locality is the upper fold and neighbouring parts of the tarsal conjunctiva—just the situations in which the normal subconjunctival tissue bears the greatest resemblance to typical adenoid tissue. The next stage, histo-

logically, is one of hyaline degeneration of the newly-formed tissue, and after this follows the amyloid condition. The formation of the amyloid bodies appears to be always preceded by hyaline degeneration, and is to be looked upon rather as an accidental change occurring only in advanced stages of the disease than as the essential condition. The last stage is characterised by calcification and ossification, in addition to pronounced amyloid degeneration; small, hard, round, and irregular bodies have been found in the tumours, which, under the microscope, proved to be composed partly of chalk and partly of true bone, showing well developed osseous corpuscles and Haversian canals. It does not appear that any definite time is needed for the development of each stage of the process. Amyloid degeneration was found in one tumour which was a year and a half old, and in another which was only five weeks old; while, on the other hand, in a case in which the tumours had existed in both eyes for at least twelve years, the left eye showed only the faintest traces of amyloid degeneration.

The clinical characteristics vary with the advance of the pathological changes. In the earliest stage the external appearance of the eyes is normal with the exception of a slight increase in the size of the eyelids at the part adjacent to the orbital margin, and slight ptosis. The tension of the lids may be increased so that some considerable force is necessary for their complete eversion. The increase of tissue lies usually in the oculo-palpebral fold of the conjunctiva, and secondarily in the orbital margin of the tarsus and in the plica semilunaris. The surface of the neoplasm is generally smooth and covered with a healthy mucous membrane; if there are folds or indentations in it, these are due to the conditions of the space in which it grows. When, as happens more rarely, the tumour grows in the dense subconjunctival tissue of the tarsus, its surface may have a knobby or granular appearance. When poorly supplied with vessels it generally has a bright yellow colour and glassy look, but, when more vascular, the colour varies from a reddish yellow to a reddish brown; the tumour has at this stage a very elastic consistency. The patient usually complains simply of some heaviness of the lids, sensitiveness of the eye, and disagreeable sensations after exposure to dust, heat, bright light, cold air, &c. Definite inflammatory changes are absent.

In the subsequent stages the new formation assumes larger dimensions, and spreads to the adjacent parts, especially the loose subconjunctival tissue of the globe, and the plica semilunaris. When the ocular conjunctiva is chiefly affected the tumour may surround the cornea more or less completely, like a ring, or may fall over it, or even conceal it entirely. The lids are pushed away from the globe, more or less, according to the size of the growth, the upper lid may overhang the lower, or when both are equally affected they may present a hemisphere with a narrow horizontal slit. The skin of the lid is generally intact, freely movable, and can be pinched up in folds. On palpation of the eyelids, knobby masses are felt, which are movable from the orbital margin but not from the tarsus. On eversion of the lids, to which end slitting the commissure is frequently indispensable, the growth usually proves not to be a single tumour but a convolution of irregular masses running parallel to the edge of the lid and with their bases in the oculo-palpebral fold, or tarsal or scleral conjunctiva. Occasionally the lower lid is everted by the mass. When the whole conjunctiva is affected the growth fills the entire space bounded by the lids, and jutting forward between them presents a picture totally unlike that of any other conjunctival affection.

During the stage of hyaline degeneration the surface of the tumour is smooth and glistening, unless it projects between the lids, when the mucous membrane becomes dry and rough; the consistency is less soft than in the earlier stage, but is still elastic; the greater the vascularity the softer the consistence. In the later stages the colour remains about the same as before, according to the amount of vascularity, and there is generally a diaphanous and glassy look; the consistency increases, and becomes comparatively hard, or even brittle. During attempts at its removal by forceps, or even during mere eversion of the lids, the tumour will rip and tear into shreds in every direction, showing smooth edges and glazed surfaces, with here and there a drop of dark blood.

Trachoma is frequently present in eyes afflicted with amyloid tumours, and it has been supposed by some observers to be the starting point of some of these growths. It appears, however, that in nearly half of the recorded cases there were no trachoma.

matous changes, and that in the remainder they were confined almost entirely to parts of the conjunctiva not affected by the amyloid disease. Kubli, therefore, agrees with Raehlmann in maintaining (in opposition to Leber and others) that the amyloid tumour is a disease *sui generis*, which originates from unknown causes in a previously healthy conjunctiva, and has nothing in common with trachoma. The juxtaposition of the two processes he regards as simply accidental.

During their later stages these tumours set up certain secondary disturbances by their mechanical interference with neighbouring structures, *e.g.*, the deformities which have been described, loss of mobility in the eyelids, ptosis, and probably loss of mobility in the eye itself, secondary affections of the cornea (though these latter, when they occur, appear usually to depend upon the co-existence of trachoma), eversion of the puncta, impairment of vision.

The diagnosis of the disease in its early stage, from diffuse trachoma with thickening of the conjunctival fold, may present some difficulty; the absence of pronounced granulations, of inflammatory symptoms, and of pannous keratitis, would suggest incipient amyloid tumour. In its later stages it is not likely to be mistaken for other tumours of the conjunctiva.

The cure of the disease has been attempted by cauterisation of the tumours and by their removal with knife or scissors, twenty-five of the thirty cases having been submitted to operation. From a review of the results obtained, Kubli advocates radical extirpation in all cases in which it can be accomplished without special difficulties; partial extirpation in all other cases, in the hope of exciting spontaneous retrogressive metamorphosis, and, if necessary, partial extirpation at several subsequent sessions. Faulty positions of the lids, if present, must be corrected subsequently by suitable operations. In the after-treatment he advises frequent cleaning of the conjunctival sac with a two per cent. solution of boracic acid and a light antiseptic dressing. Corneal complications, if they occur, must be treated according to their special indications.

C. S. BULL, (New York). The treatment of scars of the face involving the eyelids, directly or indirectly. *Trans. Amer. Ophthal. Society*, 1881, p. 219.

The tissue of a scar assimilates more and more with time to that of the surrounding parts, and its deep attachments become more movable. The author observes that, in scars involving the eyelids, this process may be assisted by a combination of massage and traction, and the parts made more movable and put in a better condition for any blepharoplastic operation. Persistent rubbing and kneading, as a preparation for operation, whether the scars were due to burns or to caries of subjacent bone, have, in a number of instances, given him excellent results. Adhesions, slight or extensive, to subjacent parts, have been slowly and painlessly detached, and a gradual absorption of the denser part of the scar has been brought about.

Scars, due to caries, which have become depressed and firmly adherent to the bone or periosteum seldom yield to this method of treatment. Such cases require free subcutaneous division of the deep adhesions, as advocated by Mr. William Adams (*Brit. Med. Journal*, April 29th, 1876). The division is effected by a tenotomy knife, introduced in healthy tissue a little beyond the margin of the cicatrix, and carried down to its base; the depressed cicatrix is then elevated and maintained in a raised position by two hair lip-pins passed through its base at right angles to each other; these latter are generally removed on the fourth day. The mobility of the parts is then kept up by rubbing.

In three cases of depressed adherent scars from bone caries treated by this method, followed by plastic operations, the author obtained excellent results. Two of these were cases of complete eversion of the lower lid, with depressed cicatrix adherent to the superior maxilla below the orbital margin; the third was a case of nearly complete eversion of the upper lid, due to a long scar above the eyebrow, with a depressed cicatrix firmly adhering to the bone.

- A. H. Benson, (Dublin.) On restoration of the eyelid by transportation of skin from distant parts of the body. *Medical Press*, April 26th, 1882, p 353.
- L. H. Tosswill, (Exeter.) A case of Ectropion successfully treated by transplantation of skin from the arm. *London, Churchill*, 1882, and *Brit. Med. Jour.*, Jan., 1882, p. 9.

Wolfe's operation for the restoration of the eyelids, though not by any means always successful, is certainly for many cases, and especially for some of the most severe, the best which the surgeon can adopt. Over those operations which attempt to supply the defect by twisting or sliding flaps of skin from the adjacent parts of the face it has the great advantage that if it fail it leaves the patient in no worse condition than before, whereas in the case of these other plastic operations failure usually leads to an increase of the deformity which they are intended to remove, and even when success is obtained the restoration of the lid involves the creation of fresh unsightly scars in the face.

Benson gives the details of eight transplantations performed by himself and Mr. Story during a period of twelve months; as the list comprises the whole of the cases thus treated it affords useful statistics. In five out of the eight *some* of the transplanted skin lived, the greater portion in two of them, less than one-half in two others, while in the fifth the flap seemed to slough through some of its depth, leaving only the part in contact with the raw surface vital. The three other cases were complete failures; in one of them the flap was torn off, together with the bandage, during the night by the patient. In the case of a boy, aged 11, ether was given for a different operation on the 36th day after the transplantation, and it was noted that the new flap on the upper lid became equally congested with the rest of the face during the inhalation, showing that the circulation was fully established though no sensation was yet observable. Benson observes that even when the transplanted skin fails to unite the contraction of the second cicatrix is less extreme than before, and that thus benefit may follow somewhat in the same way as in von Burow's operation for entropion. The edges of the wound in the arm were brought together by

sutures and dressed with gold-beater's skin, vaseline, or carbolic oil, and wool. In some cases the union was by first intention, in others the sutures gave way and the gaping wound healed by granulation.

Tosswill records a case in which extreme ectropion of both lids of one eye was very successfully dealt with, by means of large flaps transplanted at one time from the arm and forearm. Previous to operation the outer two-thirds of the upper lid was dragged up close to the margin of the brow, and the edge of the lower lid was indicated by a row of lashes apparently growing from the margin of the cheek an inch below the eye. There was considerable keratitis from exposure. Four months after the operation the ectropion of the upper lid was completely cured, the conjunctival surface being no longer exposed even when the patient looked downwards. In the lower lid, notwithstanding the presence of the large skin-graft, there was still some deficiency which might be improved by a future operation, but, in sleep, the eyeball was now quite covered, and the cornea presented a nearly normal appearance.

The following points are emphasised by Tosswill as important in transplantation operations :—

The graft should be cut with a sharp knife, and not with a pair of scissors.

In size and shape the graft, *after removal*, should approximate as nearly as possible to the size and shape of the bed in which it is to be placed, allowing not less than 40 to 50 per cent. for the shrinking which takes place as soon as it has been removed.

All areolar tissue and fat should be carefully removed from the graft, notwithstanding that during the process it is rapidly getting cold.

The graft should be secured in its new situation by stitches, which should be very fine, and sufficiently numerous to ensure exact co-aptation.

The dressings should not be interfered with for some days after the operation, and the graft should be kept thoroughly warm for some weeks at least.

The most scrupulous care should be taken, especially during the necessary dressings, to prevent the graft or any part of it,

from becoming detached from its bed ; this disaster is much less likely to occur if goldbeater's skin be applied next the graft, with a layer of absorbent cotton wool outside it, since both of these applications admit of being easily removed.

H. D. NOYES, (New York). The so-called cure of cataract by electricity. *Trans. of Amer. Ophthal. Society*, 1881, p. 305.

Noyes records the examination, and re-examination nearly two years later, of a case of senile cataract, which in the interval went through, at the hands of another practitioner, a prolonged course of treatment by electricity. Much of the interest recently excited by the supposed success of such treatment arose in connection with this very case.

The treatment consisted in the application of the constant galvanic current about the temples and eyes for a few minutes two or three times weekly, and persevered in for several months; at the same time a careful hygienic regimen was maintained: daily exercise, regulated food, Vichy water, and magnesia at night, several times weekly. The patient improved in general condition, dyspeptic symptoms disappeared, strength increased, and vision distinctly improved; she got rid of a foggyiness which had formerly veiled all she looked at, could read and recognise her friends more easily, and could walk the street alone. Good vision was not restored, however, and the treatment was abandoned, though the benefit obtained was credited to the galvanism.

A thorough examination by Noyes some months later, showed that, together with the lenticular opacities previously observed by him, there had been a choroido-retinitis; the cloudiness in the vitreous arising from this had probably been the chief factor in the disturbance of sight. This had cleared up in consequence of the careful hygienic measures, and clearer vision had resulted for a time. The opacities in the lens, which were striated and limited to certain sectors, appeared to have somewhat increased during the same time. At the time of testing, vision in each eye was worse than at the former examination until atropine was employed. At the former examination no atropine had been used.

E. NETTLESHIP, (London). *The Student's guide to diseases of the Eye. Second Edition. London, Churchill, 1882.*

Those who are familiar with this excellent handbook will feel no surprise that it has already reached a second edition. It has now been revised throughout, altered and added to in many places, and contains 48 new wood-cuts.

Chapter I, which in the first edition gave a short general review of the "leading symptoms" of eye-diseases, is in the present one entitled "Optical Outlines"; it aims at giving to the uninitiated that knowledge of optics and physiological optics which is necessary to the understanding of diseases of the eye, and the lack of which is certainly to many students the chief hindrance in this branch of their studies. The intention is excellent, but we are inclined to doubt whether so condensed a statement of an unfamiliar and abstruse subject, placed, too, at the very beginning of the book, may not sometimes rather deter than encourage the student. From our own experience in teaching we think that a simpler description of the properties of lenses and prisms, without any attempt at mathematical demonstration, would usually be more helpful to the beginner, while for further instruction he might well be referred to one of the well-known handbooks on optics. As it stands, however, the chapter will be very useful for reference.

Among other additions to the matter of the first edition we find notices of retinoscopy (keratoscopy), commotio retinæ, the electro-magnet, dislocation of the lens, thrombosis of retinal vessels, optico-ciliary neurotomy, homatropine for diagnostic purposes, and iodoform in purulent conjunctivitis. This list will show that no trouble has been spared in bringing the work fully up to date. A series of strips of variously coloured papers is given in the appendix as a means of testing the colour sense.

The book is remarkable for precision of style, and, considering its small size, for completeness in the treatment of each section of its subject. It will be found to be quite as valuable to the practitioner as to those for whose use it was nominally prepared.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

ANNUAL GENERAL MEETING,

JULY 7TH, 1882.

GEO. CRITCHETT, F.R.C.S., Vice-President, in the Chair.

REPORTED BY DAWSON WILLIAMS, M.D.

The Chairman congratulated the Society on the successful work of the past year ; the number of members of the Society was now 158, and very many of them were resident in the provinces, in India, or in the Colonies. In order to facilitate the candidature of gentlemen resident abroad, it was proposed to alter the rule requiring a candidate to be recommended by two members to whom he was personally known, and to accept the signatures of two teachers in the medical school at which the candidate was educated. It was also proposed to hold an additional meeting in the next Session.—Both these proposals were put from the Chair in the usual way, and carried unanimously.

The Report of the Treasurer (Mr. J. F. Streatfeild) showed the finances of the Society to be in a satisfactory condition.

Miners' Nystagmus.—Dr. Oglesby contributed a paper, in which he contended that this disease was due to organic cerebral changes, which were at first temporary but finally became permanent. These changes were induced by venous engorgement, consequent on the constrained position in which colliers were obliged to work. He endeavoured to support this theory by citing cases in which nystagmus was associated with epilepsy. He found that the movements remained in abeyance when the patient was erect and at rest, but returned at once on assuming the attitude of a miner at work. The attacks of epilepsy (*petit mal*) only came on, he believed, when the nystagmus had been in existence for some time. He did not think that errors of refraction had anything to do with the causation of the disease. In one case only had he found treatment by drugs do any good ; in this case the nystagmus ceased after strychnine had been taken for six weeks.

Mr. Nettleship said that he had made enquiries by letter in various parts of the country where this disease was met with. He gathered from the replies he had received that the disease was entirely confined to miners for coal; Dr. Hudson, of Redruth, for instance, had never seen it among the miners native of Cornwall; and miners from the north who came to the south suffering from it quickly recovered; he attributed the disease to the foul air, the dim light, and the necessity of keeping the eyes fixed in one direction; Dr. Thomas, of Swansea, believed that a head-injury was a frequent antecedent.

Dr. Brailey did not think that there was much evidence of central lesion. He thought that the disease was due to fatigue of certain muscles caused by the fixity of gaze; he could produce it in himself in this way.

Dr. Stephen Mackenzie observed that Dr. Hughlings Jackson regarded the disease as analogous to writers' cramp.

Mr. Snell said that he was seldom without one or more cases under treatment, but he had never met with any evidence of organic disease. The attitude of colliers, who all had to work leaning on one side, differed from that of other miners. He had never seen any ophthalmoscopic signs of congestion or of organic disease, even in cases where the disease had lasted for twenty years. He found nearly all the cases were cured by leaving off work. Internal remedies were of secondary consequence, but benefit might be derived from strychnine,

Homonymous Hemianopia, with loss of ocular movements upwards and downwards.—Mr. Lang and Dr. W. A. Fitzgerald related the case of a man aged 42, who, after an attack of faintness and giddiness, but without hemiplegia or loss of consciousness, presented total paralysis of upward and almost total of downward movements of the eyes; there was no ptosis, but the lids did not move upwards when he endeavoured to look up; there was left homonymous hemianopia. A week later, the movements of the eyes and lids were partly restored; and the fields of vision, with the exception of insular defects in corresponding parts (downwards to the left) in each field, were normal. The symptoms, it was argued, were due to a lesion of the cerebral centres for the upward and downward movements of the eye.

The Movements of the Eyelids in Association with the Movements of the Eyes.—Mr. Lang and Dr. Fitzgerald contributed a paper, in which they contested the opinion expressed by Dr. Gowers, that the movements were due to the fact that the lids were closely moulded to the globes, the edges of the tarsal cartilage fitting into the sclero-corneal sulcus. They pointed out that the movements still continued, even when the lower lid was withdrawn from contact with the globe; or if the eye were reduced to a mere stump. The inferior tarsus was connected with Tenon's capsule by a fascial expansion, and to this connection was due the downward movement of the lower lid on looking down; in addition, the upper and lower lids were closely connected at the inner and outer canthus—so that depression of the lower lid must be accompanied by a lowering of the upper lid; and, conversely, any elevation of the upper lid must also raise the lower lid. In order to permit the descent of the upper lid, the levator palpebræ muscle must be relaxed; this relaxation was attributed by Dr. Gowers to a reflex inhibition set up by contraction of the inferior rectus, or by a stretching of the fibres of the levator by the movement of the globe. The authors rejected this theory and quoted cases in which both upper lids descended normally on looking down, although the inferior rectus on one side was paralysed, and the globe motionless; they suggested that the phenomenon was due to the existence of associated centres for the movement of eyes and lids together.

Dr. W. R. Gowers, said that he thought the authors would have difficulty in proving their position that the lids were not moved owing to their contact with the globes, and to their fitting into the sulcus at the corneo-scleral junction; in looking upwards the sclerotic might be seen to bulge forward the eyelid; he did not regard the movement of the eyeball as a simple rotation on the transverse axis, but believed that there was an actual movement forwards; this would make the theory that the eyelid was moved by the globe more probable. If the downward movement of the lower lid were, as the authors maintained, due to the contraction of the inferior rectus acting through its connection with Tenon's capsule then the movement of the lid ought to be slightest towards the end of the movement, whereas it was greatest then. He believed the

eyelids merely rotated on the canthi, and had never been able to see any movement of the canthus either upward or downward. As to the descent of the upper lid, it was difficult to see how the slighter movement of the lower lid could be the cause of the movement of the upper, which was the greater. In facial paralysis the degree to which the movements of the lids were affected, depended very much on the condition of the tarsal cartilage; when these had lost their elasticity, as in old people, the lower lid fell away from the globe and then the lower lid was motionless.

Dr. W. A. Fitzgerald said that the movement of the canthi might be demonstrated without difficulty in the healthy eye.

Mr. Cowper was not prepared to accept the theory that the movements of the eyeball were other than a rotation on an antero-posterior axis; he had always regarded von Graefe's experiments as conclusive on this point. He referred to cases of persistent hyaloid canal where one particular point in the opaque string might be seen to remain motionless, whatever the direction in which the eye was directed might be.

Dr. Horrocks had never been able to demonstrate the existence of the fibrous expansion from Tenon's capsule described by the authors of this paper. With regard to the theory that the lower eyelid was moved upwards through its attachment to the upper at the canthus, it was discredited by the fact that, when the upper eyelid was moved upwards passively, the lower lid was stationary; and the same held good with regard to the upper when the lower was depressed. If the lower lid was moved away from the eyeball, there was no movement of the eyelid when the globe moved.

Mr. Lang in reply, attributed the bulging forward of the lower lid to the prominence of the orbital fat; the fibrous expansion to which the inferior rectus was connected was in its lower part not connected to the bone, and so allowed the fat to come forward. If in the dead subject the lid be pulled away from the globe, and the inferior rectus be then pulled on from behind, the lid may be observed to move; he had observed also that the movements of the lower lid could take place in the absence of the eyeball.

Micrococci in the Interior of the Eyeball.—Mr. Rudall (Melbourne, Australia) contributed the paper. The eye had been

destroyed by gonorrhœal ophthalmia, and was excised about ten weeks after the onset of the disease. The cornea had sloughed, and the lens had disappeared. In a yellowish mass which united the iris to the remains of the cornea, actively moving micrococci were discovered.

Acute Glaucoma caused by Atropine and cured by Eserine.—Mr. Snell read notes of this case. The patient, a lady aged 35, consulted another surgeon on May 9th. Atropine was used to test the refraction, which was highly hypermetropic; the solution of atropine was strong, and was frequently instilled. Symptoms of glaucoma commenced on May 13th, and two days later, when she saw Mr. Snell, the tension of the right eye was + 2; vision was reduced to counting fingers, and pain was intense. The use of eserine discs was followed by almost immediate relief of pain, and restoration of vision, while the tension returned to the normal. The other eye also became the seat of "coloured rings," and some increase of tension; eserine afforded relief to this eye also.

Tests of Vision best adapted for Service at Sea.—Dr. Brailey, after referring to the practical importance of defects in sailors in distinguishing form and colour, and the frequency with which such defects might be presumed to be present, stated that there was no test of sharpness of sight for form for either officers or sailors of the British mercantile marine, and that the examination for colour-vision, which applied to officers only, was very imperfect. The Board of Trade had made one step in advance when, two years ago, they refused to admit to his first step as an officer any one failing to pass the colour-examination. He thought the best course would be to create a superior class of sailors, who should occupy responsible positions as "look-out men" and helmsmen; such a class already existed in the French Navy. The tests recommended by the International Medical Congress were the best, with slight modifications; he advocated the use of coloured spots viewed by reflected daylight, and coloured glasses with transmitted artificial light, on the principle of Donders. He described a modification of Donders' lamps, which he found convenient, and made some suggestions with regard to ships' lights.

Living Specimens :

Mr. Juler: Extensive Central Choroiditis, in a patient the subject of syphilis and hypermetropia.

Mr. A. Critchett: 1. Neuro-retinitis in a Syphilitic Patient; 2. Extensive Retinitis following Injury to the Head.

Card Specimens :

Dr. Stephen Mackenzie: Microscopical Sections of Neuro-retinitis with large hæmorrhagic Extravasations into the Retina from a Case of Idiopathic Anæmia.

Drs. Magnus and Joy Jeffries: Chart for Colour-Testing, and a Series of Coloured Discs; the person to be tested is required to mark the discs with the colours on the chart.

Dr. Brailey: 1. Microscopical Specimens and Drawings of a Peculiar Form of Cyclitis; 2. Drawings of Cystlike detachments of the Pars Ciliaris Retinæ.

Mr. McHardy: Results of a Spectroscopic Examination of a Black Cataract, made by Dr. MacMunn, of Wolverhampton. The black coloration was not due either to hæmoglobin, methæmoglobin, or hæmatin; it was therefore not derived directly from blood pigment. It appeared to belong to the same class of pigments as melanin, and had analogies with the colouring matters of hair and feathers; it was, in fact, a cuticular pigment, a point of interest in connection with the developmental origin of the lens.

CORRESPONDENCE.

To the EDITORS of the OPHTHALMIC REVIEW.

Gentlemen,

Allow me to add a few remarks to the notice on my method of testing for colour-blindness, contained in the 9th number of your review, July, 1882.

1st. "*We have found Holmgren's test a remarkably rapid and certain one.*"

As I have publicly expressed myself, Holmgren's method formerly inspired me with full confidence, at least when applied by daylight, though with artificial light its results always appeared to be less satisfactory. But since two years I have seen more than eight cases of Daltonism, which, without any fault of the operators, could not have been discovered by that method, whilst the individuals could not distinguish certain letters on my plates, even through a single tissue-paper, and a searching scrutiny showed congenital colour-blindness to exist without any doubt. All those persons belonged to the educated classes.

2nd. "*The letters are so crowded on the background, that the complementary colour does not assert itself very strongly.*"

The appearance of the complementary colour is just strong enough (with the exception, perhaps, of the second plate), to allow every normal eye to read all the letters, even through a double tissue-paper, with a good or middling light. This is sufficient, nor is more required for our purpose. When the letters cannot be read we have the proof, that the sense of colour is impaired, either in quality or in quantity, either by a congenital or by an acquired disturbance. It suffices for the sense of red to be diminished by one third, to make it impossible to read the red plates.

3rd. "*The test is one for central vision alone. Perhaps this last is of no practical importance, but it might lead to the assumption of colour-blindness in a case in which there was merely a central scotoma.*"

The fact that by my method only the central sense of colour is tested, is rather in its favour than otherwise; it is the same by the method of Stilling. With Holmgren's method a central scotoma may easily escape detection, and the sense of colour may be considered to be normal when it is only so in the periphery, but not in the centre. For the safety of the service on railroads and at sea the central colour scotoma is just as dangerous, and even more dangerous than congenital colour-blindness, because the individuals affected by it have not learnt, like the Daltonists, to disguise their defective sense of colour, at least partially, in consequence of having sharpened their judgment as to the intensity of light. A man of science will find no difficulty in distinguishing, in any given case, a central colour scotoma from congenital colour-blindness.

By a slight modification in the way of using my plates the peripheric sense of colour can also be tested by them as to its quality.—I remain, gentlemen, yours very cordially and respectfully

PFLÜGER.

RECENT LITERATURE.

A. RETINA. OPTIC NERVE. CENTRES.

ADAMÜK. Zur Lehre von der Netzhautablösung.

Wratschebnija Wedomosti, Nr. 13.

BERNHARDT. Von den Störungen, der Sensibilität und des Sehvermögens bei Läsion des Hirnmantels.

Arch. f. Psychiatrie, XII., 3.

BIRGHAM. Farbensinn und Farbenblindheit bei den Hawaiern.

Ausland, April 24th, 1882.

CHISHOLM, J. J. An obscure case in nerve pathology accompanying optic neuritis.

Arch. of Ophth., June, 1882, p. 230.

- COHN. Photopsie.
Eulenburg's Real-Encycl. X., p. 562.
- DENISSENKO. Zur Lehre von der Ablatio retinæ.
Wratsk, Nr. 1-4, & Nr. 6.
- EWETSKY. Ein Fall von Retinitis centralis syphilitica.
Centralbl. f. pr. Augenh. June, 1882, p. 170.
- LORING, E. G. A new nervous connection between intracranial disease and choked disc.
N. Y. Med. Jour., June, 1882, p. 561.
- MAUTHNER. Ueber die Excavationen des Sehnerven.
Anzeiger d. Ges. d. Aerzte in Wien. Nr. 20.
- NOYES, H. D. Two cases of hemi-achromatopsia.
Arch. of Ophth., June, 1882 p. 210.
- PAMARD. Elongation des deux nerfs optiques pour une atrophie des nerfs d'origine syphilitique. (Société de chir. 12th of April).
Gaz. méd. de Paris, Nr. 16.
- POUCHET. Sur une espèce particulière d'images consécutives d'origine cérébrale.
Compt. rend. hebdomad. des séances de la soc. de Biol. Nr. 16.
- REUSS, VON. Photophobie.
Eulenburg's Real-Encycl. X., p. 561.
- SAMELSOHN. Seelenblindheit. Niederrhein. Ges. f. Natur- und Heilkunde zu Bonn., May 6th, 1882.
Berl. Klin. Wochenschr, 1882, Nr. 20.
- SZILI. Vorübergehende Erblindung im Wochenbette.
Centralbl. f. pr. Augenh. June, 1882, p. 169.
- WEINBERG. Contribution à l'étude de la rétinite diathésique.
Recueil d'Ophth., May, 1882, p. 283.

B. UVEAL TRACT. VITREOUS AND AQUEOUS. LENS.

- AYRES, S. C. Sympathetic inflammation.
Arch. of Ophth., June, 1882, p. 199.
- GALÉZOWSKI. Du spray phéniqué, comme moyen préventif et curatif de la Kerato-iritis suppurative dans l'extraction de la cataracte.
Recueil d'Ophth., May, 1882, p. 268.
- HIPPEL, VON. Sympathische Iridocyclitis.
Berl. Klin. Wochenschr, Nr. 19.

- JEFFRIES, B. J. Eighty-six cases of cataract operation.
Boston Med. and Surg. Jour., June, 1882, p. 560.
- KRAUSE, F. Contributions to the pathology of sympathetic eye disease.
Arch. of Ophth., June 1882, p. 173.
- PENA, DE LA. Operaciones consecutivas á la extraccion de la catarata.
La Oftalmologia pratica, May, 1882. p. 25, and June, 1882, p. 49.
- ROBINSKI. Untersuchungen zur Kenntniss der Länge und Anordnung der Augenlinsenfasern.
Centralbl. f. d. med. Wiss. 1882, May, 27th.
- SCHMEICHLER. Die Staaroperationen in der Klinik des Hofraths Prof. Dr. von Arlt.
Wiener med. Woch., Nr. 15-18.
- WICHERKIEWICZ. Ein seltener Heilungsverlauf einer Glaucomiridectomie nebst einigen Betrachtungen über traumatische Linsentrübungen.
Klin. Mon.—Bl., June, 1882, p. 181.

C. CORNEA. CONJUNCTIVA. SCLERA.

- BAYER. Ueber Credé's Verfahren zur Verhütung der Augenentzündung bei Neugeborenen.
Arch. f. Gynäk, XIX., p. 258.
- BRACHET. Les conjonctivites simples; leur nature, leur traitement.
Recueil d'Ophth. June, 1882, p. 329.
- HOGK. Ein Fall von Geschwursbildung der Bindehaut. (Sitzung d. Ges. d. Aerzte in Wien, Feb. 10th.)
Anzeiger d. Ges. d. Aerzte in Wien, Nr. 17.
- KNAPP, H. Foreign bodies tolerated in the background of the eye, with preservation of good sight.
Arch. of Ophth., June, 1882, p. 222.
- KUELI, THEODORE. The clinical significance of the so-called amyloid tumours of the conjunctiva, with a report of three new cases.
Arch. of Ophth., June, 1882, p. 149.
- REUSS, VON. Pannus.
Eulenburg's Real-Encycl. d. ges. Heilk. X., p. 305.
- REUSS, VON. Pinguecula.
Eulenburg's Real-Encyclop. X., p. 652.

STELLWAG VON CARION. Zur Behandlung der Ophthalmoblenorrhoe.

Allg. Wiener med. Ztg., Nr. 15.

UGENA. Algunos casos de queratitis escrofulosa.

Oftalmologia practica I., 2. p. 38.

WEINBERG. Quelques considérations sur les corps étrangers de la surface du globe oculaire.

Recueil d'Ophth., May, 1882, p. 257.

WEINBERG. Des brûlures du globe oculaire par agents chimiques.

Recueil d'Ophth. June, 1882, p. 366.

D. REFRACTION. ACCOMODATION. MOTOR APPARATUS.

ALTMANN. Ueber die Vorbemerkungen des Herrn Prof. Abbe zu seinen Grenzen der geometrischen Optik.

Arch. f. Anat. and Physiol. Anat. Part 1882. 1.

JAVAL. Théorie de l'accommodure.

Compte rendue hebdomadaire des séances de la soc. de Biol., Nr. 16.

LEROY. Sur la théorie de l'astigmatisme (Suite).

Revue génér. d'Ophth. I., 4, p. 177.

VELARDI. Dell' astenopia accommodativa.

Bolletino d'oculistica, IV., Nr. 9, p. 117.

E. EYELIDS. LACHRYMAL APPARATUS. ORBIT.

BURCHARDT. Beitrag zur Behandlung der Trichiasis.

Charité-Annalen, VII., p. 633.

CHIBRET. Une méthode de stricturotomie destinée à remplacer le procédé de Bowman dans le traitement du rétrécissement des voies lacrymales.

Recueil d'Ophth., June, 1882, p. 321.

CORNWELL, H. G. A case of obstruction of the inferior canaliculus of the eye by dacryoliths.

American Med. Jour., July, 1882, p. 108.

NIEDEN, A. A new case of pulsating exophthalmos of both eyes.

Arch. of Ophth., June, 1882, p. 185.

NOYES, H. D. A case of lodgment of a foreign body in the cavities of the nose, orbit, and cranium, where it remained five months; removal by operation; subsequent trephining for pus in the brain; death; autopsy.

Amer. Med. Jour., July, 1882, p. 45.

SEBORDONE, G. Eccissione della parete anteriore o estirpazione dell'intero sacco lagrimale? (Della clinica oculistica del Prof. M. del Monte).

Il Movimento med.—chir., XIV., fasc. 1, 1882.

THOMSON, W. On two cases of abscess of the antrum.

Dublin Med. Jour., July, 1882, p. 16.

F. MISCELLANEOUS.

ADAMÜK, E. Some observations upon tumours of the eye.

Arch. of Ophth., June, 1882, p. 190.

CHISHOLM, J. J. Extensive ravages from lupus with subsequent cicatrisation, leaving but one small hole in the face, which represents both mouth and nose, and with complete closure of the anterior nasal orifices.

Arch. of Ophth., June, 1882, p. 234.

COHN. Troubles visuels et affections oculaires chez les onanistes.

Recueil d'Ophth., May, 1882, p. 278.

FALLERONI. L'uso della calamita nella chirurgia oculare.

Morgagni. Feb., 1882.

FLEISCHL. Ueber die Theorien der Farbenwahrnehmungen.

Med. Jahrb. d. Ges. d. Aerzte in Wien, 1882, p. 73.

GALÉZOWSKI. De la syphilis oculaire et son traitement par les injections hypodermiques mercurielles.

Recueil d'Ophth., May, 1882, p. 290.

GALEŹOWSKI. De l'iodoforme dans les affections oculaires.

Recueil d'Ophth., June, 1882, p. 327.

GROSSMANN, L. Die syphilitischen Krankheiten des Auges.

Pester med.-chir., Presse, 1882.

JULER, H. An improved Ophthalmoscope for refraction and other purposes.

Brit. Med. Jour., July, 1882, p. 95.

KLEIN, S. Ueber die Anwendung der Massage in der Augenheilkunde.

Wiener med., Presse, 1882, Nr. 9, 10, 12 & 15.

KNAPP, H. A fragment of steel embedded in the cornea for two years without causing irritation.

Arch. of Ophth., June, 1882, p. 232.

MAYERHAUSEN. Casuistischer Beitrag zur Kenntniss des Albinismus.

Klin. Mon.—Bl., June, 1882, p. 191.

- MENGIN. Une visite aux grandes cliniques ophthalmologiques de Paris.
Recueil d'Ophth. June, 1882, p. 338.
- NIEDEN. Ein Fall von recidivirendem Herpes zoster ophthalmicus.
Centralblatt. f. pr. Augenh. June, 1882, p. 161.
- OLIVER, C. A. The comparative action of sulphate of daturia and of sulphate of hyoscyamia upon the iris and ciliary muscle.
Amer. Med. Jour., July, 1882, p. 102.
- RAMPOLDI. Rapporti morbosì esistenti tra l'apparato urinario e il visivo.
Annal. Univ. di med., March 1882.
- REICH. Notiz über die Anwendung des Resorcin bei Augenkrankheiten.
Sitzungsprotokoll d. Kaukas. med. Ges. Nr. 11 & 12.
- ROSMINI. Rendiconto clinico dell'istituto oftalmico di Milano per quinquennio 1874-1878.
Gaz. med. Nr. 14.
- SCHUCHARDT. Die Impftuberculose des Auges und ihr Zusammenhang mit der allgemeinen Impftuberculose. (Phys. Verein zu Breslau).
Breslauer ärztliche Zeitschrift Nr. 9 & 10.
- TOME, A. M. C. Congreso médico internacional celebrado en Sevilla.
Oftalmologia practica, I., 2, p. 30.
- VOGL. Physostigma venenosum.
Eulenburg's Real-Encyclop. X., p. 639.
- Baseler Augenheilanstalt. 18th Annual Report, from 1st of January, 1881, to 1st of January, 1882.
Basle, 1882.
- Koelner Augenheilanstalt für Arme. 7th Annual Report for 1881.
Cologne, 1882.
- Rotterdam vereeniging tot het verlenen van hulp aan minvermogene Ooglijders voor Zuid-Holland. Zestiende Verslag, loopende over het jaar 1881.
Rotterdam, van Sijn and Zoon.
- Contagious eye diseases in schools and asylums.
N. Y. Med. Record, July 1, 1882, p. 14.
- Ophthalmoscopic Demonstration, at the Royal Eye Hospital, Manchester.
Brit. Med. Jour., June, 1882, p. 966.

ON CHANGES IN THE FUNDUS OCULI IN ANÆMIA.

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The purpose of this paper is principally to record the results of a series of careful observations of the state of the fundus oculi in simple chronic anæmia, or chlorosis, as seen in young women, made in order to determine the frequency with which the changes, such as optic neuritis more especially, and the like, signalled by Hirschberg, Gowers, and others, may be found, and to discover whether these or any other changes occur insidiously, or without giving rise to subjective symptoms likely to direct the attention of the patient to the state of her eyes.

These observations have extended over about eighteen months, as we were anxious to select only well-marked examples, and indeed in that period we have been able to collect only fifty cases. For purposes of comparison, and to aid the general inquiry, we have also examined a certain number of examples of anæmia due to hæmorrhage, both spontaneous and traumatic, of which we have notes of eleven cases. In all cases, with one or two exceptions, the fundus was examined after the pupil had been dilated by a mydriatic.

We may as well state at once that the result of these observations does not indicate that structural changes are commonly present in simple chronic anæmia, but still

they are more common than might have been presumed. In all cases of anæmia, including those from hæmorrhage, there was notable pallor of the disc and fundus, in some cases extreme in degree. The veins were usually nearly of the same size and colour as the arteries, though they were sometimes broad and tortuous, either from distension or atony. They pulsated in several cases, but not more often than usual. No pulsation of the arteries was observed in any case.

Of the fifty cases of chlorosis, in two a little whitish yellow spot was found in the retina of one eye—the right eye in the one case, the left eye in the other. In three cases a small black pigment spot was found in the retina—in the left eye in two cases, in the right eye in one. In one case a black spot was seen in the right eye, and a white spot in the left eye. These changes are not of much importance, though they may have been caused by small isolated exudations of lymph, or more probably by hæmorrhages, due to some external cause, such as coughing or straining. Of these six cases two had slight myopia ($\frac{1}{60}$ and $\frac{1}{30}$), while three had hypermetropia ($\frac{1}{72}$, $\frac{1}{36}$, and $\frac{1}{30}$), and one had slight mixed astigmatism, but in no case was the refractive error marked.

In five cases a very *slight blurring of the disc* was noted, not amounting to obvious exudation. The refraction in these five cases was respectively H $\frac{1}{36}$, $\frac{1}{36}$, $\frac{1}{72}$, and $\frac{1}{11}$, and M $\frac{1}{72}$.

In five other cases somewhat more decided changes were observed, four showing slight milky or yellowish ill-defined exudations around the discs or near the fovea or at the periphery of the retina, and one presenting two spindle-shaped hæmorrhages in the right eye, just above the disc. It is noteworthy that all the four cases in which exudations were observed were markedly hypermetropic, viz., H $\frac{1}{8}$, $\frac{1}{9}$, and $\frac{1}{10}$, while the fourth, a girl aged 17, showed a hypermetropia of $\frac{1}{30}$ when not under atropine, so that it is fair to assume that her whole hypermetropia was not less than $\frac{1}{15}$. This is strongly

confirmatory of the view maintained by Gowers that hypermetropia is a potent exciting cause of neuritis and neuro-retinitis, where any predisposition exists ; but it must be admitted that in eight cases which presented a hypermetropia exceeding $\frac{1}{18}$, no exudations and no traces of neuritis were seen.

To return to our recital of the changes met with in the fundus, one case presented a small circumscribed patch of atrophied choroid at the posterior pole, the rest of the fundus being normal and vision unaffected. There was no history of any blow on the eye, and probably this was the result of an isolated hæmorrhage into the choroid. In one case there was extensive choroido-retinitis, with extreme myopia ($\frac{1}{8}$), but as there was abundant evidence of hereditary syphilis, it is not probable that this change was in any way related to anæmia.

If we exclude this and the case with the patch of choroidal atrophy, it leaves sixteen out of the fifty cases which presented some abnormal appearance of the fundus, and, while allowing that in the greatest number the changes were indecisive and of little moment, in five, or, in other words, in ten per cent. of the whole number, they were unequivocal, while in eight per cent. there was evidence of some degree of neuro-retinitis. This proportion is certainly very striking, and indicates that some degree of change of this nature is much more common than would be suggested by the very small number of cases hitherto reported. It is certain that, as regards the general conditions, these cases differed in no important degree from the remainder of the series, which was kept as uniform as possible for the purposes of comparison.

The acuity of vision was in all cases equal to normal, except in one or two instances, in which the defect was owing to such causes as irregular astigmatism, extreme hypermetropia, and the like, so that anæmia does not appear to affect acuity of vision at all ; but it is remarkable that in several cases, in which the pupil was fully

dilated by atropine, a perforated disc held before the eye actually depreciated the acuity of vision, which would seem to indicate a failure of light-perception. It is to be regretted that this point was not noted in all the cases, as our attention was only drawn to it late in the inquiry; but in all cases in which it was looked for it was present, and was unquestionable. Possibly this failure of light-perception may be one factor in the production of the dilated pupil so general in chlorotic girls.

In the series of cases of secondary anæmia, the result of hæmorrhage—eleven in number—one case of severe flooding after labour, with loss of sight, showed primary atrophy of the optic nerves, the retinal vessels being reduced to threads, and vision to simple perception of light. This case conforms to the well known type of optic nerve atrophy after hæmorrhages, usually, as in this case, spontaneous in origin. In one case of hæmorrhage after amputation at the hip for strumous disease of the hip joint, the discs were pale and blurred, and a large striated hæmorrhage surrounded the left. In this case the anæmia was not solely the consequence of the hæmorrhage, as the patient had been for long the subject of an exhausting joint-disease. In two cases black spots were found in the retina, and in one the discs were slightly blurred. In no case did the hypermetropia exceed $\frac{1}{20}$, while one case showed a myopia of $\frac{1}{48}$.

In this latter series, therefore, changes of some sort were found in five cases out of eleven, though definite changes were found in only two. The series is not large enough to give much statistical value to the proportion, and the cases differed too much in their clinical features to enable us to draw any deductions from them.

A CASE OF PURULENT OPHTHALMIA CURED BY IODOFORM.

BY DR. DUJARDIN, LILLE.

[Translation.]

I had just read Dr. Grossmann's interesting paper on Iodoform in the "Ophthalmic Review," when a case presented itself in my practice, in which I had recourse to this remedy with the happiest result. The case was a desperate one.

The patient, a child aged eight months, had suffered from purulent ophthalmia five days before I first saw it. Both corneæ were greyish throughout, and on the point of ulceration. The eyelids were constantly closed, and presented a truly enormous erysipelatous swelling; pus escaped in abundance, unmixed with tears. The general condition was bad; face pale; complete loss of sleep and appetite.

At first, according to routine practice, I applied a two per cent. solution of nitrate of silver, neutralised it with salt-solution, and then washed freely with pure water. As I had almost expected, the result was not good; the everted eyelids presented whitish escars, produced by the cauterisation; both corneæ showed well-defined opacities, probably caused by the injurious action of the nitrate of silver; the conjunctival suppuration remained quite as abundant as before, and the swelling of the lids underwent no change in spite of the use of iced water compresses. Under these circumstances I almost despaired of a successful issue, but resolved to try the insufflation of iodoform so strongly recommended, and dusted the powder all over the conjunctival surface of the lids. The following day an improvement was noticeable; the purulent

discharge had decreased considerably, and the eyes began to water, which I regarded as a very favourable symptom. I continued the application of iodoform. During this time the little patient took broth and Malaga wine. The purulent secretion then entirely ceased, the tears ran freely, the corneæ returned to a better state, becoming more transparent; the superficial opacities, due to the use of the nitrate of silver, gradually disappeared. Eight days from the commencement of the treatment the child was out of danger. I sent him back to his parents at Roubaix, with only a small opacity remaining in each cornea, which will, doubtless, disappear in a short time.

This happy result was certainly due to the iodoform, and I intend henceforth to use this remedy largely in cases such as this, which have hitherto been almost beyond the resources of our art—according to Critchett, for instance, who has gone so far as to propose the temporary division of the eyelids as a heroic method of treatment. In iodoform we have, I hope, a more effective means of dealing with those cases, still too frequent, in which other remedies remain powerless. In Lille we have rather frequent epidemics of true ocular diphtheria. I shall take the first opportunity of trying iodoform, and report the results obtained by means of this drug, which will take, I trust, an important place in ophthalmic therapeutics.

A CASE OF ACUTE CONJUNCTIVITIS CAUSED BY THE ELECTRIC LIGHT.

BY W. C. ROCKLIFFE, M.A., M.D.,
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So far as I am acquainted with our English literature and periodicals, I am not aware that the effect of the electric light in producing acute conjunctivitis has been mentioned. The following case, which is the first I

have met with, may therefore be of interest to some of your readers.

A. B., aged 28, was recently engaged in placing Siemens's electric light in the old portion of the town, and, together with his fellow-workman, in adjusting the carbon points of a lamp of 3000 candle-power. This he did without coloured spectacles, which, he informs me, are always supposed to be worn during this portion of his business. As an almost daily occurrence the brilliancy of the spark causes more or less paralysis of the retina, or, to quote his own words, "he rarely is able to perceive the people walking on the footpath when descending the ladder from adjusting." This effect soon passes off; but on this particular occasion, as his power of vision returned (in about fifteen minutes), there followed a rapidly increasing lacrymation, photophobia, pain, and swelling of the lids—the whole of these symptoms being developed in thirty minutes. Having suffered from many slight attacks of a similar nature, he applied cold water, which previously had relieved him; but the pain and swelling increasing, I saw him the following day. He had apparently suffered intense agony during the night. The lids of both eyes were very hot, red, swollen, and brawney, being on a level with the superciliary ridge, the swelling extending some distance over the brow. The pain was most acute in and around the eye. On separating the lids, which was most difficult, owing to the intense photophobia, a considerable amount of lacrymal fluid gushed out. The conjunctival vessels were exceedingly large, and the eyeballs a brilliant scarlet. The corneæ were clear. All of these symptoms yielded to a brisk purge and lead lotion in forty-eight hours.

His fellow-workman was similarly affected, but to a less extent.

As a considerable heat is thrown out from the lamp it would be interesting to know whether these symptoms were due to the brilliancy or to the radiant heat.

J. SAMELSOHN (Cologne). The Anatomy and Nosology of Retro-bulbar Neuritis (Central Amblyopia). *Von Graefe's Archiv. XXVIII., I., p. 1.*

At the recent International Medical Congress Samelsohn presented a case of central amblyopia which he had been able to accurately investigate, both before and after death ; he now, in an elaborate and highly instructive essay of more than 100 pages, discusses the whole subject in the light of the fresh facts afforded by that case. As giving additional value to this paper, it should be noted that a case of central amblyopia with post-mortem examination, which, so far as regards the localisation of the tissue changes, corresponds perfectly with Samelsohn's, is recorded by Nettleship and Walter Edmunds in the Transactions of the Ophthalmological Society, Vol. 1., page 124.

Among 6,632 cases of eye-disorder, diseases of the optic nerve, including secondary affections and toxic amblyopias, numbered 154, or 2·3 per cent. Among these 154 were 20 cases of retro-bulbar neuritis, not including the toxic amblyopias ; including the latter there were 57 cases, *i.e.*, 57 cases of central amblyopia in 154 optic-nerve disorders of all kinds—37 per cent. The disease must therefore be considered a common one.

In the case specially investigated there was at first only a small relative scotoma for red and green concentric with the fixation point in each eye ; peripherally the fields were normal ; central acuity was reduced to $\frac{1}{70}$ and $\frac{1}{200}$; the discs were normal. Two months later the scotoma in each eye had increased in size, and perception of blue was impaired also ; white appeared blueish ; the disc-margins were slightly hazy ; and there was severe pain in the head. Finally, two years later, the scotomata had further increased in size and were absolute for white as well as for colours, the boundaries not being exactly determinable ; the temporal margin of each disc remained hazy, and the temporal half of each was pale ; nothing abnormal was visible in the blind area of the retina. The patient died of valvular disease of the heart. At the first examination of the eyes the diagnosis made was alcoholic amblyopia, later that of retro-bulbar neuritis was substituted, as there was no evidence of excessive use of alcohol or tobacco, and their total discontinuance effected no improvement. Mercurial inunction and a

seton in the neck did not benefit the ocular condition, but perhaps gave relief to the pains in the head.

Microscopic examination after death showed that posterior to their entrance into the optic foramina the nerves and their sheaths were normal in all respects. Within the bony canal the sheath and vessels belonging to it were normal, but the nerve itself was much reduced in size and flattened from above downwards; transverse sections from this part of the nerve showed a peripheral ring of healthy nerve substance, and within this an area of hypertrophied connective tissue with great proliferation of nuclei and increase of blood vessels, together with remnants of destroyed nerve fibres—the results of an intense interstitial neuritis. On the distal side of the foramen the signs of interstitial inflammation gradually subsided, and the affected nerve substance presented the signs of ordinary atrophy, showing that the focus of the morbid process had been in the region of the foramen and that the atrophic changes occurring lower down were secondary, and due to the broken continuity. The changes were precisely similar in the two nerves, except that in the right a fresh focus of active inflammation appeared to exist at the point of entrance of the central vessels into the nerve-trunk.

The damaged nerve fibres were manifestly those connected with the blind area of the retina—the region of the macula. By following them down in successive sections from the optic foramen to the eye, information was obtained as to the normal *course of the macula-fibres in the trunk of the optic nerve*. It is as follows :—

In the optic foramen the macula-fibres constitute a circular bundle occupying the axis of the nerve, and are surrounded equally on all sides by the bundles which supply the peripheral parts of the retina. Anterior to the bony canal they pass gradually from the axis to the median side of the nerve, preserving, however, the form of a circular bundle until they arrive at the point of entrance of the central artery and vein. From that point onwards to the papilla they still occupy the median side of the nerve, but are displaced by the entrance of the vessels in such a manner that the sectional form of the bundle is wedge-shaped, the base of the wedge forming the side of the nerve, the apex reaching nearly to the central vessels.

It must be noted that although the destructive process involved a large portion of the whole sectional area of the nerve, the blinded portion of the retina formed a very much smaller fraction of the retinal expanse. This apparent discrepancy is explained very satisfactorily by the supposition that the highly sensitive central part of the retina receives a much larger number of fibres in proportion to its area than does the less highly endowed periphery.

From these observations it appears that the pathological process which underlies central amblyopia is *an axial interstitial neuritis, originating at the optic foramen, and leading to cicatricial contraction, and secondary descending atrophy of the nerve fibres.* Cases in which the periphery of the visual field is affected as well are to be explained by a more extensive and peripheral inflammation in the nerve trunk.

The recognised causes of the disease are of two chief kinds, viz.:—cold and certain toxic substances, especially alcohol and tobacco; in many cases the two influences act together. *Sudden cooling* of the surface of the heated body has been found in animals to produce interstitial changes in the internal organs, and, amongst others, the nerve sheaths, whilst the true parenchymatous parts escape. The author cites cases in which the onset of the amblyopia was positively referred by the patients to exposing their heated faces to sudden and severe cold, and he believes that the intimate vascular connection which exists between the skin of the face and the retro-bulbar portion of the optic nerve affords the explanation. *Alcohol* in long-continued excess causes inflammation and proliferation of the connective tissue of the internal organs, especially the liver and brain, and it is not unreasonable to suppose that it may sometimes produce similar interstitial changes in the optic nerves. In a case of chronic alcoholism recorded by Erismann such changes were actually observed after death. *Tobacco*, which according to the prevalent belief is the most frequent cause of central amblyopia, is less easily connected with retro-bulbar neuritis. Changes in the disc are rare in tobacco amblyopia, and disuse of the poisonous substance usually leads to restoration of vision; hence the author infers that the mischief very seldom goes as far as true proliferation of connective tissue, but consists in some influence

exerted either directly upon the nerve-substance or upon the circulation.

Whatever may be the precise action in each case it appears certain that there are several different toxic substances which are apt to excite similar interstitial changes in the internal parts. Why the liver should be selected in one case and the optic nerves in another is unknown; but that there may be some special relation between these parts is suggested by the frequent occurrence of metastatic deposits in the liver after the removal of choroidal and orbital sarcomata. The localisation of the chief mischief in the optic foramen on both sides, cannot, Samelsohn thinks, be regarded as accidental, but is to be explained by the anatomical relations of the nerve, which at this part more than at any other would favour interference with the lymph-streams. The remarkable selection of the centre of the nerve trunk by the inflammatory process he attributes to the fact that, unlike other parenchymatous organs, the nerve is supplied by blood-vessels which enter at the surface and have their finest capillary plexuses, and therefore their most active interchange of fluids, at the centre. Those organs, such as the liver and kidney, which are supplied by blood-vessels ramifying from a central main trunk towards the periphery, suffer, when inflamed, first and most in their peripheral parts.

The subjective symptoms of the disease are satisfactorily explained by the tissue-changes discovered. The first complaint is usually of a shining or "glimmering" mist of variable intensity, which covers, and to some extent conceals, the object looked at; usually the glimmering is most obvious in bright light, but in some cases it is perceived in the dark also; its intensity has no definite relation to the reduction of acuity of vision, for patients with almost normal central acuity sometimes complain greatly of this peculiar appearance, while in the later stages, when there is an absolute central scotoma, it is often absent; it is especially characteristic of the milder forms of toxic amblyopia, and of those rare cases in which central amblyopia is acute and intense. It is doubtless the functional expression of nerve irritation caused by the initial vascular disturbance, and is naturally of wider area than the actual scotoma which follows it, for the latter corresponds to the

smaller centric area in the nerve trunk within which the inflammatory process leads to damage of the nerve-fibres with impairment or interruption of conduction. Absolute scotomata are uncommon; when they occur they are central, and are surrounded by an area in which the scotoma is relative; and in the latter there is defect of colour-perception, mostly for red and green. In slight cases the colours are altered in *intensity* only, in severer cases in *tone*. Improvement progresses invariably from the periphery of the scotoma towards the centre. These variations are explained by corresponding differences in the extent and progress of the inflammation in the nerve trunk.

The facts of Samelsohn's case prove that impairment of colour perception may occur independently of any central change, simply through impaired conduction in the nerve-fibres.

Unlike other observers, Samelsohn has always found the light-sense diminished in central scotomata. This diminution bears no regular proportion to the loss of visual acuity, but is definitely related to the size of the scotoma and the disturbance of the colour-sense. To test the light-sense he uses Masson's disc regarded through a tube which limits the visual field.

The *prognosis* in central amblyopia is more or less favourable in proportion as the central absolute scotoma is smaller or larger.

Treatment has hitherto frequently proved powerless. Samelsohn has seldom got much benefit from the use of the artificial leech, and at present restricts the use of blood abstraction almost entirely to cases of intra-ocular disease. Together with avoidance of the exciting causes, iodide of potassium in large doses—2 to 5 grammes, *i. e.* 30 to 75 grains daily—is the appropriate remedy; guided by a knowledge of the inflammatory and proliferative nature of the initial lesion, Samelsohn has lately pursued this treatment more thoroughly and persistently than before, and with good results. The patient should be warned not to expect improvement in less than six weeks, for though visual acuity, as tested by types, may apparently set in sooner, the scotoma and the subjective troubles rarely begin to diminish much earlier than this. Fresh improvement may be obtained by resuming the iodide, even in cases of long standing, provided the periphery of the field is not greatly affected and atrophy is not far advanced. In cases of very acute retro-bulbar neuritis with extensive and absolute central scotoma, in which a

rapid therapeutical effect is necessary if atrophy by pressure is to be avoided, Samelsohn advises immediate inunction of mercury, to which the iodide may succeed on the return of perception of light. He declares that of all diseases of the optic nerves that which is characterised by central amblyopia is the most amenable to treatment.

Moritz Samuel (Berlin). Diabetic Amblyopia. *Centralbl. f. praktische Augenheilkunde*, July, 1882, p. 202.

Diabetes appears to be one of the conditions which may cause central amblyopia without ophthalmoscopic change. Samuel refers to five accurately recorded cases, and gives the details of two others recently observed in Hirschberg's clinique. To this list should be added two cases described by Nettleship and Walter Edmunds (*Transacts. Ophth. Soc.*, vol. i., p. 124,) in which central amblyopia was met with in connection with diabetes, though in one of the two tobacco was perhaps the cause. The subjective changes closely resemble those which characterise tobacco-amblyopia; an examination of the urine in all such cases is therefore important.

In Samuel's first case the patient was a woman, aged 52; vision had been failing a long while, and both eyes had been iridectomised, presumably for the relief of a supposed glaucoma, but without benefit; media slightly clouded, but not sufficiently so to account for the impaired acuity; the two eyes about equally impaired, $V = \frac{1.5}{200}$; fundus quite normal in both. Right visual field normal peripherally both for white and for colours; left visual field contracted at the inner side by about 25° for white, while for colours it was contracted in an unusual manner, so that the field for red was in most places wider than that for blue. In each field a central colour-scotoma surrounded the fixation point, having in the right eye a radius of 3° — 5° , in the left eye rather smaller dimensions. The ocular symptoms suggested the presence of diabetes, and on examination, the urine contained five per cent. of sugar. The patient declared that she felt perfectly well, but was often thirsty and drank much water. After several corroborative examinations of the eyes she was sent to Karlsbad for treatment.

In the second case the patient was a man, aged 52, who had suffered for five years from diabetes,—sugar more than 5 per cent. ; vision had been failing about three months. Right eye counted fingers at twelve feet, left eye at eight feet. The fundus was normal in each eye, except that the discs, especially the left, were rather pale. Right field peripherally normal for white, but somewhat reduced for colours, and green appeared white ; left field slightly reduced concentrically for white and colours ; and green appeared white. In each field a central colour scotoma—in the right oval as commonly met with in tobacco-amblyopia, in the left roundish. On re-examination, after a month's treatment at Karlsbad, the central scotomata were less marked, and the periphery had widened ; improvement in central acuity was less definite.

MACE AND NICATI. Contribution to the Study of the Visual Field for Colours. *Archives d'Ophthalmologie*, Sept.-Oct., 1881, p. 506.

The authors investigated the variations which occur in the extent of the visual field for different colours under varying degrees of illumination. Instead of using coloured test-objects (squares of coloured paper) which become soiled, and hence give results which are not fairly comparable, they placed blue, green, and red glasses before the eye under examination, and used a square of white paper as the test-object, noting in each case the points at which the white paper when thus viewed through the coloured glass first became visible on the perimeter.

The glasses selected were such as did not diminish central visual acuity with strong illumination, and diminished it slightly, but equally, with a moderate illumination.

With strong illumination the field of the healthy eye is not diminished in size by the interposition of either of the coloured glasses ; with feeble illumination, on the contrary, it is diminished by all, but unequally, namely, least by blue, most by red ; the influence of green is intermediate between these, and may be disregarded in pathological studies.

When the field is already diminished by disease, as in cases of atrophy of the optic nerve and glaucoma, it is still further diminished by the coloured glasses even under strong illumina-

tion. Thus the loss of sensibility which occurs in these conditions appears to have just the same effect with regard to colour-perception, as a diminished intensity of illumination in the case of the healthy eye.

Central colour-scotomata are rendered much more apparent by the interposition of a coloured glass ; in severe cases a blue glass suffices to make the scotoma manifest, in slighter cases a red glass is required. Under these circumstances the obscuration or disappearance of the paper as it enters the affected area is much more marked than when no glass is used. The same result is obtained without a glass if the illumination be sufficiently diminished.

In hemianopia the diminution of the field affected by coloured glasses and lowering of the light occurs only at the normal boundary of the field, not at the limit of the blinded area. (Should this prove to be uniformly the case, it would afford a valuable distinction between true hemianopia of central origin and certain forms of partial atrophy of the optic nerve which simulate it).

A. OSTERWALD (Göttingen). A Case of Leucæmia, with Double Exophthalmos produced by Orbital Tumours. *Von Graefe's Archiv.*, XXVII., III., p. 203.

In 1878 Leber described a case of leucæmia with tumours in the orbit, and under the conjunctiva (*Von Graefe's Archiv.*, XXIV., I., p. 295). Osterwald reports another case of the same kind which has presented itself since then at the Göttingen clinique.

The patient was a boy aged four. The only noteworthy antecedents to the disease were a slight attack of measles, which had left the child pale, but not otherwise unhealthy, and the accidental striking of the head several times, but without any noticeable bad consequences. The first thing noticed was a swelling of the right eyelid, followed a little later by a similar swelling of the left, with prominence of the eyeballs ; loss of appetite occurred at the same time. The swelling of the lids increased, and the proptosis led shortly to an affection of the cornea, on account of which the child was sent to the ophthalmic clinique.

The bilateral tumours of the orbit, together with the

manifest extreme cachexia suggested the diagnosis of leucæmia, and this was established by the microscope, which showed a proportion of white corpuscles to red, varying between 1 to 4, and 1 to 3. Repeated examinations of the blood revealed the presence of molecules, which, by their reaction with fuchsine, were proved to be micrococci. The internal organs showed no abnormal condition, except a slight enlargement of the spleen; the bones were not thickened or painful. The exophthalmos, and the consequent insufficiency of the lids, led to suppuration of the right cornea; later there was bleeding from the nose and mouth. The patient died with symptoms of acute hydrocephalus.

The post-mortem revealed a number of flattened tumours of a yellowish pus-like colour and firm consistence, situated on the epicranium, especially at the confluence of the sagittal and coronal sutures, and at the posterior angle of the lambdoid suture. The bone underneath the tumours was rough. Similar tumours replaced the outer wall of the lateral and cavernous sinuses, covered the dura mater in the parietal region, and filled the orbits, leaving free, however, a space around the optic nerves, so that the latter were not pressed upon; another was found in the region of the left superior frontal convolution of the brain. There were multiple tumours also on the inner side of the ribs and spinal column. The marrow of the ribs and of the right femur was of a greenish yellow pus-like colour. The marrow was changed into lymphadenoid tissue, and contained many rhomboid crystals (Neumann) and masses of granular pigment. The internal organs, heart, kidneys, and liver, showed much fatty degeneration; the spleen appeared normal. The connective tissue of the optic discs and nerves was proliferated, the capillaries were dilated, and the whole discs were infiltrated with round cells; there were also hæmorrhages, and varicosities of the nerve fibres. Similar changes were seen in the retina and in the choroid. The optic nerves showed distinct interstitial neuritis.

The microscope showed numerous nests of micrococci in the spleen, and similar collections were found, though less numerous, in the neoplasms situated on the ribs, in the pia-mater, and in the orbits. The tumours had the characteristics of lymphadenoid tissue—round cells embedded in a reticular

substance ; they consisted of an infiltration of the connective tissue with round cells. In the cortex cerebri beneath the tumour of the pia-mater, the neoplasm began in the shape of miliary nodules of round cells resembling tubercles.

The author, after critically examining the various features of this case, concludes that the new formations were caused by the infiltration of the tissues by the white corpuscles of the blood, and were analogous to inflammatory infiltrations and formations of pus. The evidence goes to show that the cells had passed into the tissues in consequence of some irritation, analogous perhaps to that of inflammation. The discovery of micrococci in the tumours, while they were absent from the unaffected tissues, appears to show that they were connected with the formation of the tumours, in short, that they were the cause of the immigration of the white corpuscles. The question remains undetermined whether the over-activity of the organs which produced the lymph cells was caused by the local influence of micro-organisms, or was a secondary consequence of the great loss of white corpuscles arising from their passage into the irritated tissues, and partly, also, from their destruction by fatty degeneration. No micro-organisms were found in the medullary substance of the bones or the lymph glands ; in the spleen, on the other hand, in which they were especially numerous, there was no trace of irritation. Osterwald urges that the evidence afforded by this case proves the theory suggested by Leber and Klebs that leucæmia is a micro-parasitic disease.

P. HAENSELL (Vienna). Experimental Inoculation of Syphilis in the Iris and Cornea of the Rabbit. *Von Graefe's Archiv.*, XXVII., III, p. 93.

Previous experiments by Haensell and others have established the fact that the introduction of tuberculous matter into the anterior chamber of the rabbit will cause an eruption in the iris of tubercles identical in appearance with the tubercular growths which occur in the human iris. The author has now made similar experiments with syphilitic matter for the sake of comparison between the two morbid processes.

The cornea and the anterior chamber were inoculated in

different experiments with the thin purulent contents of a syphilitic gumma of the sternum, with small portions of mucous tubercles of the anal region, and with similar portions of an indurated but non-ulcerated prepuce. Immediate inflammatory changes occurred in some cases, presumably from the introduction of septic matter together with the syphilitic virus, but the process of the syphilitic infection was clearly traceable notwithstanding; it was most characteristic, however, when these extraneous effects were absent.

Four days after inoculation of the anterior chamber absorption of the foreign substance was complete, and the eye had apparently recovered its normal state; then, after an incubation of about four weeks a subacute iritis set in with turbidity of the aqueous, ciliary injection, discolouration and swelling of the iris, and posterior synechia; some days later vascular nodules appeared upon the iris, such as are seen in syphilitic iritis in the human subject. In one case, at a later period of the disease, larger nodules formed in the ciliary body; these on account of their larger size and late appearance may be regarded as true gummata.

After inoculation of the substance of the cornea the period of incubation was rather longer; at the end of six weeks, when only a slight opacity at the site of the puncture remained, several small vascular nodules began to develop.

Post-mortem examination of the animals some months after the inoculation showed in some cases many small hardish nodules in the lungs and liver, which under the microscope were found to consist chiefly of round cells and larger many-nucleated epithelioid cells, together with a few giant-cells.

The differences observed between the syphilitic process and that which followed the inoculations of tubercle were these: the incubation-period of the syphilitic virus was longer than that of the tubercular, and the whole course of the disease much more chronic in character; the syphilitic nodules were finely vascularised throughout, while the tubercular masses were devoid of vessels; the syphilitic never underwent caseous degeneration, while in the tubercular this constantly occurred.

The products of this syphilitic inoculation were found to be capable of successful inoculation upon other animals.

Attempts to inoculate the anterior chamber of the rabbit with lupus failed.

R. DEUTSCHMANN (Göttingen). Experience of the Use of Iodoform in Ophthalmic Practice. *Von Graefe's Archiv.*, XXVIII., I., p. 214.

In Leber's clinique iodoform has been much used of late. When applied by the surgeon it is sprinkled into the conjunctival sac in the form of the finest possible powder, scented with Tonquin bean (*vide* O. R., April, p. 147); for patients' own use at home it is made into an ointment with ten parts of vaseline. The two preparations have given equally good results. In moderate quantity it is well borne by the healthy conjunctiva, but when too freely applied, and especially where the conjunctiva is already hyperæmic or inflamed, it excites a conjunctivitis not unlike that caused by atropine; the amount of secretion accompanying the inflammation is very small. In certain cases of idiosyncrasy iodoform, like atropine, cannot be tolerated. In a few instances, when employed only twenty-four hours after the application of a mercurial ointment to the conjunctiva, it proved specially irritating—a chemical effect analogous to that produced by dusting calomel into the eye during the internal administration of iodide of potassium. If these special effects be borne in mind, iodoform is capable of rendering most valuable service in ophthalmic practice.

Deutschmann advocates its use as a means of restraining inflammation in all recent injuries of the eyelids, conjunctiva, and globe, including abrasions left after removal of foreign bodies from the cornea, and wounds inflicted by operations, such as iridectomy, tenotomy, and enucleation; a layer of iodoform applied to the raw surface after enucleation, and once or twice renewed, is said to induce rapid healing without a trace of secretion. Whenever infection of a wound occurs, it acts as a powerful antiseptic.

In simple catarrhal conjunctivitis it did no good; in purulent conjunctivitis it reduced the secretion somewhat, but was less efficacious than nitrate of silver; in phlyctenular and in granular conjunctivitis, acute and chronic, it had no marked effect. In scleritis and episcleritis its use gave negative results. In phlyctenular pannus there was sometimes a good effect; in true corneal herpes there was none.

In all forms of suppurative keratitis on the other hand,

whether spontaneous or from injury, it distinctly promoted healing, especially in hypopyon-keratitis (*ulcus corneæ serpens*) it gave excellent results; in a series of forty-one cases treated with iodoform in addition to other measures, as compared with a similar series treated before the introduction of iodoform, the number of total losses was reduced from seven to three, and the number of cases in which puncture or division of the ulcer by the knife had to be resorted to, was reduced from twenty-two to eight. Seeing that the operative treatment very frequently results in anterior synechia, and not seldom in the formation of cataract, and that in unruly patients it is very troublesome, this is an important gain. Where the destructive process was very intense, or already far advanced, eyes were still lost in spite of the iodoform. So soon as the ulcer becomes clean and bright, and the hypopyon has disappeared, the iodoform should be discontinued; a too long employment appears to retard repair.

In addition to its antiseptic effect it has the advantage of an anæsthetic power; in the majority of cases a diminution of pain occurred after the first application.

In one respect Deutschmann's experience is decidedly at variance with that of other observers, namely, as regards the efficacy of iodoform in purulent conjunctivitis; in other hands it has rendered signal service in cases of this nature.

RECENT LITERATURE.

A. RETINA. OPTIC NERVE. CENTRES.

- BOLL. Tesi ed ipotesi, sulla percezione della luce e dei colori.
Ann. di Ottalm., XI., fasc. 2 and 3, p. 95.
- BRILL, N. E. Report of a case of destructive brain lesion accompanied by colour-blindness.
N. Y. Med. Record, July, 1882, p. 81.
- DENISSENKO. Einiges über den Bau der Netzhaut des Aales.
Arch. f. micr. Anat., XXI., p. 1.
- DONDERS. Explications sur les systèmes chromatiques.
Ann. d'Oculistique, May—June, 1882, p. 205.
- HAAS, J. H. DE. Umsetzung von Licht in Erregung zum Sehen.
Klin. Mon.-Bl., July, 1882, p. 219.

OGLESBY, R. P. Typhoid fever in relation to disease of the optic disc.

Brain, July, 1882, p. 197.

PAMARD. Elongation des deux nerfs optiques.

Bull. et Mém. de la Soc. de Chir., VII., 4.

PARINAUD. Siège cérébral des images consécutives.

Compt. Rend. Hebd. d. Séanc. de la Soc. de Biol. Nr. 18.

PFLUEGER. Methode zur Prüfung des Farbensinnes mit Hülfe des Florcontrastes. Zweite wesentlich verbesserte Auflage.

Bern, 1882.

RENAUT. Sur la rétine du type juxta-épendymaire (communication préalable).

Revue Gén. d'Ophth., I. Nr. 5, p. 225.

ROSENSTIEHL. De l'emploi des disques tournants pour l'étude des sensations coloreés. Intensité relative des couleurs.

Compt. Rend. Hebd. des Séanc. de l'Ac. Nr. 21.

ROSS, J. Post-hemiplegic chorea, hemianæsthesia, and hemianopsia.

Med. Times and Gaz., July, 1882, p. 128.

SAMUEL. Ueber die diabetische Amblyopie.

Centralbl. f. pr. Augenh., July, 1882, p. 202.

SHAW, J. Melancholia with left hemiplegia, and defective vision of left eye; destructive lesions of right ascending convolutions and gyrus angularis.

Brain, July, 1882, p. 257.

SOURY. Philosophie naturelle. Paris, 1882. Cap. VI: Le sens des couleurs.

SOURY. Nouvelles recherches sur le sens des couleurs dans la série animale.

République Française, 1882. Nr. 30.

ULRICH. Embolie eines Astes der Arteria centralis retinae.

Klin. Mon.-Bl., July, 1882, p. 238.

ULRICH. Drei Fälle von typischer Retinitis pigmentosa mit rudimentärer Arteria hyaloidea perseverans.

Klin. Mon.-Bl., July, 1882, p. 240.

B. UVEAL TRACT. VITREOUS AND AQUEOUS. LENS.

FALCHI. Tuberculosi dell'occhio con glaucoma consecutivo.

Ann. di Ottalm., XI., fasc. 2 and 3, p. 132.

FALCHI. Tuberculosi dell'occhio per inoculazione.

Ann. di Ottalm., XI., fasc. 2 and 3, p. 143.

GOLDZIEHER. Ein Fall von Chorioiditis disseminata nebst Bemerkungen über Chorioidealentzündungen im Allgemeinen.

Pester med. chir. Presse, 1882.

MAYERHAUSEN. Zur Aetiologie des Hydrophthalmus.

Centralbl. f. pract. Augenh., August, 1882, p. 225.

PECK, E. S. Glaucoma. Its diagnosis without the ophthalmoscope; the mechanical theory of its ætiology; with a few clinical cases.

Boston Med. and Surg. Jour., July, 1882, p. 8.

PONCET. Tuberculose de l'iris et du corps vitré.

Progrès Méd. Nr. 24, p. 467.

STREATFIELD, J. F. Mydriatics and glaucoma.

Brit. Med. Jour., July, 1882, p. 193.

ULRICH. Ruptur der Linsenkapsel.

Klin. Mon.-Bl., July, 1882, p. 230.

WEINBERG. Kyste de l'iris.

Recueil d'Ophth., July, 1882, p. 439.

WOLFF. Ueber Iristuberculose.

Centralbl. f. pr. Augenh., July, 1882, p. 196.

C. CORNEA. CONJUNCTIVA. SCLERA.

ABADIE. Considérations nouvelles sur le traitement de la conjonctivite granuleuse par sa transformation en conjonctivite purulente.

Ann. d'Oculist., May—June, 1882, p. 227.

BRACHET. Conjonctivites simples, leur nature, leur traitement.

Recueil d'Ophth., July, 1882, p. 410.

DORMAGEN. Ein Fall von Ulcus corneæ rodens. Inaug. Dissert.

Bonn, 1882.

MILLIGAN, VON. Ein Fall von Bindehauttuberculose.

Centralbl. f. pr. Augenh., July, 1882, p. 193.

PAULSEN. Die Anwendung der kalten Douche bei Blenorrhœa neonatorum complicata.

Berl. Klin. Wochensch. Nr. 21.

SCOTT, X. C. Diphtheritic conjunctivitis treated with iodoform.

Boston Med. and Surg. Jour., July, 1882, p. 16.

D. REFRACTION. ACCOMMODATION. MOTOR APPARATUS.

GALEZOWSKI. Ophthalmoscope à réfraction et à double foyer.

Recueil d'Ophth., July, 1882, p. 436.

HERRMANN. Ueber die Brechung bei schiefer Incidenz mit besonderer Berücksichtigung des Auges (III. part, concluded.)

Arch. j. d. ges. Physiol., XXVII., p. 291.

HOCK. Ptosis.

Eulenburg's Real-Encycl., XI., p. 167.

MARCHI. Sugli organi terminali (nervosi corpi Golgi) nei tendini dei muscoli motori del bulbo oculare. (Studio istologico fatto nel laboratorio della clinica oculistica della R. Università di Modena).

Arch. per le Scienze Med. V. Nr. 15.

MATTHIESSEN. Ueber die Beziehungen, welche zwischen dem Brechungsindex des Kerncentrums der Krystalllinse und den Dimensionen des Auges bestehen. (Aus dem physiol. Institut zu Rostock.)

Arch. f. d. ges. Physiol., XXVII., p. 510.

RAVA. Contributo allo studio della Paralisi dei nervi motori dell'occhio.

Ann. di Ottalm., XI. fasc. 2 and 3, p. 175.

SCHLEICH. Klinisch-statistische Beiträge zur Lehre von der Myopie.

Mitth. a. d. ophth. Klin. in Tübingen. I., 3, p. 1.

ULRICH. Intermittirender Spasmus eines Musc. rect. intern. auf hysterischer Basis.

Klin. Mon.-Bl., July, 1882, p. 236.

VELARDI. Dell'astenopia accommodativa.

Bollet. d'Oculistica, IV., 10, p. 133.

WEISS (HEIDELBERG.) Beiträge zur Anatomie des myopischen Auges.

Mitth. a. d. Opth. Klin. in Tübingen, I., 3, p. 63.

E. EYELIDS. LACHRYMAL APPARATUS. ORBIT.

BULL, C. S. Lesions of the orbital walls and contents due to syphilis.

N. Y. Med. Jour., Aug., 1882, p. 113.

HUME, G. H. Ectropion of both eyelids operated on by Wolfe's method.

The Lancet, July, 1882, p. 100.

PEYROT. Sur une observation de tumeur de l'orbite.

Bull. et Mém. de la Soc. de Chir., VIII., 4.

RAMPOLDI. Un caso di tenonite primitiva.

Ann. di Ottalm., XI., fasc. 2 and 3, p. 170.

SNELL, S. Case of ectropion successfully treated by transportation of a large non-pedicled flap from the arm.

The Lancet, July, 1882, p. 102.

ULRICH. Retrobulbärer Bluterguss, eine Netzhautablösung vortäuschend.

Klin. Mon.-Bl., July, 1882, p. 242.

WEISS (NANCY). Tumeur pulsatile de l'orbite; ligature de l'artère carotide primitive; guérison.

Revue d'Ocul. du Sud Ouest., III., 4, p. 97.

- WEINBERG. Exophthalmie à la suite de dents cariées.
Recueil d'Ophth., July, 1882, p. 441.
- WILLIAMS, R. On the treatment of entropion and trichiasis
 by a new operation.
Liverpool Medico-Chir. Jour., July, 1882, p. 319.

F. MISCELLANEOUS.

- BAMPTON, A. Nerve-stretching for supra-orbital neuralgia.
The Lancet, July, 1882, p. 138.
- BLASCHKEZ. Traitement de la syphilis oculaire.
Gaz. Hebd. de Méd. Nr. 19.
- CALHOUN. Accidental vaccination of the eye.
Boston Med. and Surg. Jour., July, 1882, p. 17.
- GOVY. Remarques sur la vitesse de la lumière.
Compt. Rend. Hebd. des Séanc. de l'Ac. Nr. 19.
- HARTOC. De l'oeil impair des Crustacés.
Compt. Rend. Hebd. des Séanc. de l'Ac. Nr. 21.
- HIRSCHBERG. Ein Fall von Magnet-Operation.
Berl. Klin. Wochensch. Nr. 21.
- JAVAL. Contribution à l'ophthalmométrie.
Ann. d'Oculist., May—June, 1882, p. 213.
- NAGEL. Mittheilungen aus der ophthalmiatischen Klinik in
 Tübingen. Drittes Heft. 1882.
- NAGEL. Statistische Notizen aus der ophthalmiatischen
 Klinik in Tübingen.
Mith. a. d. Ophth. Klin. in Tübingen, I., 3, p. 118.
- SCHUBERT. Ueber den Einfluss der Schiefschrift auf die Augen
 der Kinder.
Baier. Intelligenzblatt, XXIX. Nr. 21, 1882.
- SOLOMON, J. V. On some advances in modern-ophthalmic
 surgery.
Brit. Med. Jour., Aug., 1882, p. 271.
- STOCQUART. Note sur l'emploi de l'acide borique dans les
 affections externes de l'oeil.
Ann. d'Oculist., May—June, 1882, p. 221.
- ULRICH. Fünf Fälle von Fleischvergiftung in einer Familie.
Klin. Mon.-Bl., July, 1882, p. 235.
- YVERT. De l'extraction des corps étrangers du globe de l'oeil
 (morceau de fer ou d'acier) au moyen de l'aimant.
Recueil d'Ophth., July, 1882, p. 385.

THE THEORY AND PRACTICE OF RETINOSCOPY IN THE DIAGNOSIS OF THE ERRORS OF REFRACTION.

BY HENRY JULER, F.R.C.S.,

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This method of detecting and correcting errors of refraction by means of the ophthalmoscope mirror used at a distance is one of great interest to ophthalmic surgeons, and inasmuch as its practice requires but little cost of time or trouble either to the practitioner or to the patient, and its results are of the most exact and reliable nature, no apology is, I think, needed for thus bringing forward the subject.

The method is not altogether a new discovery, for we have evidence that it was known as long as twenty years ago to Mr. Bowman, of London, who then occasionally used it as an aid to diagnosis. Of late years, however, it has been practically developed by M. Cuignet, of Lille, who used a plane mirror, and applied to it the title of "Keratotomy," and published one or two articles on the subject in 1874. The results obtained by M. Cuignet were still further elaborated by Dr. Mengin, who had been associated with him at Lille, and who introduced the study to several clinics in Paris during the year 1878. Since then it has been warmly embraced by Dr. Parent

in Paris, who has substituted the use of the concave for that of the plane mirror, and has used the term "Retinoscopy" in preference to "Keratotomy." In an article on "Keratotomy" published in the "Receuil d'Ophtalmologie" for February, 1880, he has given a complete explanation of its theory and its practice. Dr. Parent was in attendance at Moorfields for some time at the beginning of last year, where I had the pleasure and benefit of some practical demonstrations from him. For the last two years the subject has been warmly embraced in London by Mr. Stanford Morton, Dr. Charnley, Mr. Adams Frost, and other ophthalmic surgeons.

The process consists in illuminating a portion of the retina by means of a cone of light reflected from a concave mirror, and in observing the direction taken by the image of this illuminated portion and its surrounding shadow when the mirror is tilted about its centre.

The patient is seated in a dark room, having a bright ophthalmoscopic lamp placed either just above or on either side of his head behind the plane of his eyes, so that his eyes may thus be shaded from its direct rays. The most accurate results are obtained when the pupil is dilated, and the accommodation completely paralysed by homatropine or atropine; but approximately correct estimation can generally be made without this inconvenience, especially in myopia and myopic astigmatism. The observer is situated immediately in front of the patient, at a distance of 120 centimetres; he directs the patient to look straight at his forehead, and by holding a concave mirror of about 25 centimetres focal length immediately in front of his own eye, he projects a cone of light from the lamp into the eye of the patient, and thus obtains an illumination of the fundus. He now proceeds to tilt the mirror about its centre in various directions, vertically, horizontally, and obliquely. If the eye under observation is *hypermetropic* he will see a distinct image of the illuminated area of the retina having at its margin a crescent-shaped non-

illuminated portion or shadow, both of which distinctly move in the *opposite* direction to that of the rotation of the mirror. The illumination is brightest in the lowest form, and decreases in intensity as the hypermetropia increases in degree. The rapidity of movement of the image and crescentic shadow is greatest in the lowest forms, and undergoes a slight decrease for each dioptric of hypermetropia.

If the eye is *emmetropic*, no distinct image is visible. The observer sees a bright illumination only. This bright reflex moves in the opposite direction to that of the mirror, but it has no distinct outline, and therefore no definite crescentic shadow at its margin. If a concave lens of strength 0.25 D be placed in front of the patient's eye by means of a well-fitting spectacle frame this will render the eye hypermetropic, and the opposite image and shadow will be at once observed.

If the eye under observation is *myopic* to the extent of 1 D and upwards a distinct image with crescentic shadow is seen to move in a direction *similar* to that of the tilting of the mirror. When the myopia is below 1 D the image is blurred and indistinct at 120 cm., it can only be seen by increasing the distance between the observer and patient, and even then it is sometimes not visible. The amount is, however, ascertained by placing a concave lens in front of the eye under examination. The strength of the lens which is just sufficient to render the eye hypermetropic—that is to render the image and crescentic shadow distinct and moving in the opposite direction—is just in excess of the myopia. We have only to subtract 0.25 D from the strength of the lens used and this will give the amount of the myopia.

If the eye under examination is *astigmatic*, the above signs as to the distinctness and the direction of the image have to be observed in the two chief meridians. In simple astigmatism we find emmetropia in one meridian and the myopic or hypermetropic appearance in the meridian at right angles to this. In compound

astigmatism we find a distinct image and crescentic shadow in both meridians, moving either in a similar or an opposite direction to that of the mirror, but with a difference of intensity of light and of rapidity of movement. In mixed astigmatism we find a similar image and shadow in one meridian, and an opposite image and shadow in the meridian at right angles to this.

The explanation of the above appearances is not difficult. The concave mirror forms a real inverted image of the flame of the ophthalmoscope lamp, and from this image a cone of light passes into the eye, and is refracted by the media in such a manner as to form an illuminated area on the retina which is nearly circular in form. This illuminated area passes in the *opposite* direction to that of the tilting of the mirror in all cases, whether of hypermetropia, of emmetropia, or myopia, although to the observer it does not appear to do so. The reason of the apparent differences may be explained by supposing the refractive media of the eye to be replaced by a convex lens, which is called in optical works the "equivalent lens." Then in a hypermetropic eye the retina is situated between the lens and its principal focus, and therefore rays emerging from the eye, although less divergent, will never meet in front of the eye, but will appear to the observer as if proceeding from the conjugate focus behind the retina, and will there form a virtual image which appears to move in the same direction as the illuminated area—that is, in the *opposite* direction to that of the mirror. In an emmetropic eye the illuminated area of the retina is situated at the principal focus of the lens, therefore rays will emerge from the eye quite parallel, and no distinct image can be formed. The edge of the illuminated area is therefore ill-defined, and has not a crescentic shadow. In a myopic eye the illuminated area is situated beyond the principal focus of the lens, therefore refracted rays will meet in front of the eye at the conjugate focus, and will then form a real image of the illuminated area which moves in the opposite

direction to that of the latter, and therefore in the same direction as that of the mirror. In cases of very low myopia (below 1 D) this real image is situated beyond the position of the observer (120 cm.). In order to see it he must either withdraw himself to a greater distance, or he must place in front of the patient's eye a convex lens equal to the myopia in question, so as to bring the real image to a point between himself and the patient.

Having thus found the kind of error of refraction, we now proceed to estimate its amount or degree in the eye under examination. For this purpose a well-fitting spectacle frame and a box of ordinary test lenses are required. The observer and patient remain in the same position as before. The spectacle frame is adjusted to the patient's face so as to hold the centre of each lens well in front of the pupil, and as near to the eye as possible, without interfering with the movement of the eyelids. The object we have in view is so to neutralise the ametropia by the use of concave or convex lenses as to produce the emmetropic appearance in the eye or the meridian under examination. This we have seen to be a bright reflex which moves in the opposite direction to that of the mirror, but which has no distinct outline nor crescentic edge. It can only be mistaken for myopia below 1 D, from which it can be distinguished by the fact that in the emmetropic condition a distinct opposite image and crescentic shadow are produced by a concave lens of 0.25 D, whilst in myopia a stronger lens than this is required.

Suppose the eye or meridian to be hypermetropic, then we successively place in front of the eye convex glasses of increasing strength until the opposite image and crescentic shadow just become blurred and only a bright reflex is visible. The strength of the glass used to effect this is the exact expression of the hypermetropia. Next, suppose a myopic eye or meridian to be under examination, then by using concave lenses instead of convex, and proceeding as before, we continue to apply

the concave lenses, until the similar image and shadow becomes distinctly opposite in direction. Then by deducting 0.25 D from the strength of the lens thus used we obtain the amount of the myopia.

In testing for astigmatism the above methods are adopted for each chief meridian. A little experience soon enables one to find the approximate direction of each meridian. The plan I adopt is first to estimate the meridian of least refraction, and to record it upon my case paper by a stroke of the pen, which indicates its direction, at one extremity of which I place the letters M, E, or H, as the case may be, with the number of dioptries of error, and then proceed to test the meridian at right angles to this.

Having thus ascertained the kind and the degree of the error of refraction by means of retinoscopy, we proceed to confirm the diagnosis by making the patient read distant types with the glasses indicated. In cases of simple hypermetropia and myopia this is usually effected in a few seconds, but in astigmatism the necessary calculations have to be made from the data obtained by retinoscopy as to the combination or otherwise of spherical and cylindrical glasses that shall be used. The direction of the axis of the cylinder must of course be accurately adjusted.

In my experience this method is very exact ; it costs less time and less trouble both to the doctor and the patient, especially in the astigmatic cases, than the other methods at our disposal. Its purely objective nature renders it particularly useful in many ways, as, for example, in young children, in persons who are illiterate, in cases of suspected malingering, in hysterical people, and in others where, owing to slight choroidal and retinal changes, the patient is quite unable to assist us by subjective symptoms .

AN OPERATION FOR THE REOPENING OF THE OBSTRUCTED IRIS-ANGLE IN GLAUCOMA.*

BY KARL GROSSMANN, M.D.

The precise situation, corneal or scleral, of the incision in glaucoma operations is of no consequence so far as the immediate effect of the operation is concerned, but it is evident that the duration of the effect must depend on the region in which the cut is made. The nearer it is to the angle of the anterior chamber and Schlemm's canal the greater will be the chance of re-establishing the natural outlet for the excess of fluid pent up in the anterior chamber, and the more lasting will be the reduction of tension. It may be partly due to this circumstance that the effects of iridectomy and sclerotomy vary so much under otherwise similar conditions.

We try to make our iridectomies in glaucoma as peripheral as possible, and I have noticed myself that from the time when I began to make the section even a little more than 2 millimetres distant from the cornea, I generally obtained better results than before. These were principally obtained in cases of acute and subacute glaucoma, and were superior to those of the few sclerotomies I have performed. In these latter, which were only eight in number, I followed von

* This Paper was to have been read in the Section of Ophthalmology at the Worcester Meeting of the British Medical Association, but the author's unavoidable absence prevented.

Wecker's directions, but though the extent of the section was always longer than that effected in iridectomy, and as peripheral as I dared to make it, the results were inferior to those of the iridectomies.

Only in one instance of iridectomy and one of sclerotomy have I been able to examine the eyes after excision. The sclerotomised patient insisted upon excision six weeks after the operation on account of severe pain, V being = O. The iridectomised patient died two and a half months after the operation of pneumonia.

Microscopic sections showed that in the iridectomised eye the angle of the anterior chamber in the region of the coloboma was considerably freer than in the corresponding part of the sclerotomised eye, the two cases having been very similar ones before the operation.

Though I have only the anatomical evidence of these two cases, and too much weight must not be attached to any conclusion derived therefrom, I feel inclined to account for the different appearances and clinical results by the traction to which the iris was subjected by the iris forceps in the case of the iridectomy. By pulling the iris in a radial centripetal direction through the corneal wound, the closed angle was, or may have been, reopened a little, the iris being pulled out pretty forcibly over the posterior corneal surface, with which, as we know, a slight adhesion soon forms, which might have become permanent if left to itself.

No further opportunity up to the present time has occurred to me of verifying this supposition as to the different effects of iridectomy and sclerotomy. However, this idea led me to try an operation which, while avoiding the drawback of iridectomy, viz., the deformity of the pupil, effects in a higher degree than iridectomy can do the reopening, or at least the easing, of the obstructed angle at the ligamentum pectinatum.

The operation is easy and simple enough. With a paracentesis-needle with *arrêt*, I puncture the cornea about

half-way between the free margin of the iris and the limbus corneæ, *i.e.*, about 2 millimeters from the latter. I choose the place for the paracentesis in a quadrant adjacent to the one in which I want to do the reopening of the angle. After the escape of the aqueous humour, I take a club-ended silver probe, which I have previously shaped at the end like a button-hook, though not quite so much curved, pass it into the anterior chamber through the corneal wound, the convexity of the hook being directed towards the ciliary region, and try to push it gently but decidedly forward between the cornea and iris as far and in as large a circumference as possible. With the hook I gently press the peripheral part of the iris back towards the lens, where a distinct resistance can be felt. This proceeding I repeat a few times, and having done so in the one quadrant, I turn the convexity of the probe round and go, if necessary, to another quadrant. Finally, I simply cover the eye with an occlusive bandage without applying a myotic.*

Before I first performed the operation, I was rather afraid of the dangerous proximity of the ciliary body, but I found my fears unnecessary. Only in one of my cases (Case 2) was there, 18 hours after the operation, a pretty strong circumcorneal injection, which, however, soon yielded to ice compresses.

I will give here as briefly as possible the three, or rather the four, cases in which I have applied this mode of operating.

CASE 1. A lady 58 years of age: Right eye—Iridectomised two years ago. Glaucoma absolutum. $V = O$; $T + 3$. Cornea and aqueous humour transparent, anterior chamber shallow, no synechiæ; pupil of medium size, no reaction; lens slightly opaque. Left eye—Iridectomised shortly after the

* I thought at first of constructing an instrument by which the operation could be done while the aqueous humour was retained—a perforated needle, similar to Langenbeck's needle for staphylorrhaphy, through which a hook might be pushed forward—but the curved probe answers perfectly well.

right eye, cornea and aqueous clear, lens very slightly opaque, fundus not clear, $T + 1$; V , can only distinguish dark from light.

I proposed the operation for the right eye, to which patient agreed, as this eye could not possibly become worse.

In order to have an unbiassed judgment as to the effect of the operation, I resolved to do beforehand a simple paracentesis. A week after this paracentesis had been done the tension had reached about $+2$, and on the 15th day I could not find any difference from the conditions previously present. I therefore proceeded on that day with the operation as described above. No pain whatever followed, and no irritation; the tension increased very slowly, but was scarcely $+2$ five weeks later. Having obtained the patient's permission, I operated again six weeks after the first time, *i.e.*, eight weeks after the paracentesis, choosing other parts of the iris angle this time. The same absence of any important reaction; the tension went on increasing slowly to $+1$, but stopped there, and was about the same three months afterwards. Vision remained $= 0$. For this latter reason the patient did not allow me to operate upon the other eye in which possibly some little improvement of V might have been procured.

This case so fully answered my expectations as far as the tension was concerned, that I was anxious to perform the same operation on the next suitable case. Three months elapsed, and the old lady called to show herself again. $T + 1$, that is to say, not increased; but to my surprise I found the cataract, which before was only beginning, had made very rapid progress, so that no reflex at all could be obtained from the fundus. I should expressly mention that I had not manipulated at all with the hook in the region of the iris coloboma. I could not account for this effect, for I had not hurt the capsule of the lens with the paracentesis needle, nor did I directly touch the lens with the hook.

A counter experiment was therefore desirable to show whether this effect was a merely accidental one. The opportunity for it came soon in a case of commencing and very slowly-progressing cataract.

CASE 1a. A man of 48 years, on whom I had performed, a year previously, iridectomy on both eyes, as a preliminary to an extraction to be done at a later date. His eyesight had begun to fail four years ago, and had not much decreased during the last twelve months. Now, a year after the iridectomy, I noticed scarcely any advance of the morbid process in the lens, and therefore, first the right, and a fortnight afterwards the left eye, was subjected to the same operation as Case 1. In neither eye did any remarkable reaction take place, and up to now—four months—no change in his cataractous lenses can be noticed.

It was therefore proved by Case 1a that the quick ripening of the cataract in Case 1 was not due to the operation as such, and I therefore did not hesitate to take in hand

CASE 2: A woman, 40 years of age, had had good sight in both eyes. Eight days ago she had awakened with a sudden attack of pain and dimness of sight in the left eye, which became rather painful and got more and more dim. Present state: Right eye—Slight Hm., $V = 1$. Left eye—Cornea and aqueous slightly clouded; $T + 2$, $V =$ fingers at 3 feet; severe headache. On the same day I performed, for the same reason as in Case 1, a simple paracentesis of the cornea with eserine. The next day T about normal; $V =$ fingers at 3 feet. No pain. The tension increased gradually, and after a fortnight was almost as high as before the paracentesis. $V =$ hand-movements. A fortnight later she had a very bad attack of pain, and on that day I performed the operation, dealing with as much of the circumference as possible; about half of the periphery was reached. Very much bolder than at the first operation, I possibly pressed rather strongly, for the next day the ciliary region was very red, an intense circum-corneal injection being visible, which led me to apply ice and to stop the use of eserine. In two days this symptom had entirely vanished, and no further inconvenience was noticed. Seven weeks later, when I saw patient last, T was scarcely above the normal; $V = \frac{2}{20}$.

I confess that I ought to have first tried eserine by itself in this case before puncturing the cornea; the use of a myotic alone might have had some good effect.

The next and last case is a very interesting one, as it shows a well marked success.

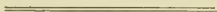
CASE 3: The patient, a woman aged 38, had received a blow on the right eye. She presented herself a week after the accident complaining of pains and bad sight. Cornea normal; anterior chamber transparent and clear; shallow in the upper half, deep in the lower; pupil rather small, and not reacting well to light; slight iridodonesis in the lower half of the iris. Lens transparent, evidently luxated upwards; V = fingers at 12 ft. T + 2; pain not very great.

I at once applied eserine in order to ease the iris angle in the upper half where it was evidently obstructed by the pressure of the luxated lens. The pupil did not become much narrower, though eserine was applied every three hours for three days, nor did the tension decrease; I therefore decided to operate. But to have quite a clear case, I first made a simple paracentesis of the cornea, though I hardly expected a good result from it. The narrow pupil dilated a little after the escape of the aqueous. Three days later the tension began to rise again, and on the eighth day it was again + 2. On that day I performed the intended operation, making the puncture in the outer quadrant of the cornea. I used the hook pretty freely, and pushed the iris in its upper half, and the lens with it, gently but firmly backwards, after passing the convexity of the hook as far as I dared into the angle. Scarcely any reaction followed; the tension remained low, only just rising a trifle above that of the other eye. The superior part of the anterior chamber is a little deeper than before, and though the iridodonesis persists, no disagreeable symptom has since appeared—two months after the operation. $V = \frac{20}{100}$ with concave cylinders, varying at different times. The pain has ceased entirely.

This last case is a very significant one. After an injury, by which part of the iris-angle had been obstructed by the pressure of the luxated lens, a glaucomatous state had set in, which was not relieved either by eserine or by simple paracentesis. The attempt to mechanically reopen the angle was followed by a very satisfactory result so far as tension and sight were concerned.

These are the cases in which I performed the operation. With the exception of Case 2, the reaction was practically none, and the fears as to cyclitic irritation were not realised. I am of opinion that the improvement in the three cases—the first being a very desperate one—must be attributed to a successful mechanical reopening of the angle, which, once established, became permanent.

It remains to give the complete indications for the operation, and to state the circumstances and conditions under which a good effect may be predicted with certainty. But from the small experience I have had so far I am not able to do this in this preliminary communication. However, though my cases are few, their success on the one hand, and the easiness, as well as the harmlessness of the operation on the other, justify, I think, their publication, so that others may try the operation and compare their results with mine.



MISCELLANEOUS NOTES AND CASES.

BY SIMEON SNELL,

OPHTHALMIC SURGEON TO THE SHEFFIELD GENERAL INFIRMARY,
AND TO THE INSTITUTION FOR THE BLIND.

I trust the following miscellaneous notes on various subjects, and the record of cases from my note book, may not be devoid of interest to some readers of the Review. As to the cases, I have done little more than relate the bare notes; some of them seemed to invite further remarks, but with these my paper would have reached an inordinate length.

DUBOISIN.

Several instances of alarming symptoms caused by the use of duboisin as an ocular application have been recorded. These have somewhat deterred me from employing it, and in a not very extended experience with this drug two cases have caused alarm, indeed in one of these instances the condition of the patient appeared dangerous.

The first was a young girl of 19 or 20, with compound hypermetropic astigmatism. To paralyse her accommodation, a solution of duboisin (2 gr. to 1 oz.) was dropped into one eye. She left me to wait at a friend's house near at hand, and promised to return in half an hour. Before the expiration of that time a messenger came to inquire if the girl's father was at my house, and to tell me also of the alarm they were in respecting my patient. She had been ill, they said, almost ever since the drops were put into her eye; she had been wandering and talking nonsense; vomiting also, I believe, and feeling very faint and ill. In about three quarters of an hour or rather more these symptoms had passed off; she then came to me and I proceeded to work out her astigmatism.

The second case was different and more alarming. The patient was a lady, aged about 46, suffering from mild but very obstinate chronic iritis. A relapse occurred directly the pupils were allowed to be free from the influence of a mydriatic. Atropine, borne very well at first, had subsequently, in whatever manner prescribed, excited an immense amount of conjunctival and palpebral inflammation. A solution of duboisin (1 gr. to 1 oz.), was used once daily in each eye with benefit; it was continued for two or three weeks. In accordance with advice, she was to leave home last June for the sea-side, and just before her intended departure I desired her to procure duboisin in discs (Savory and Moore's), thinking she would find their use more convenient when away from my immediate care. They were not employed until my visit, a few days later, when I inserted one disc into one eye, and desired the patient to have another placed in the other eye in

the course of the afternoon. Before I left the house, however, she much wished me to insert the disc myself, which I accordingly did, and this would be about fifteen minutes after the one had been placed in the first eye. It was about 12.30 when I left the house, and at three o'clock Mrs. ——'s son called on me to say that his mother was very seriously ill, they thought she had had an apoplectic attack. This condition had come on shortly after I had left her; at times she was quite unconscious and then she rambled a great deal. She was thought to be in a very bad way, and I was wished to see her immediately. It was about 3.30 when I reached the house, that is three hours after leaving it previously. I now learnt that directly after my departure she had a small quantity of broth, but immediately felt deadly faint, but I understood her face was rather flushed than pale; presently she became unconscious, breathing heavily. It was with difficulty she was roused to take any notice of anything, and then she rambled on to various things which had no connection with what was said to her. Sal volatile had been administered, and so had a little brandy. I found her somewhat improved. She, with some difficulty, recognised me, but seemed to know nothing of my previous visit, and her mind immediately wandered. Her face was somewhat flushed, and the pulse was full and bounding. A mustard-plaster was applied to the neck, and before my departure, after a stay of from half an hour to three quarters, there were decided signs of improvement. If I had had with me any pilocarpine I should have administered it hypodermically. It was not until late at night that the delirium left her and she began to recollect and remark on things which had happened in the morning. Next day her thoughts were more collected, but she was much prostrated.

In this last case it will be seen that the toxic effects of duboisin were alarmingly shown. After the first case I had materially limited or almost discarded its use, but here was a case in which a mydriatic seemed necessary, and in which one was compelled to relinquish those more commonly in use. Each disc would be equivalent to $\frac{1}{200}$ gr. of duboisin, or equal to solution of about .5 gr. to the ounce—much stronger than is necessary to

produce the effects of the drug. I believe also that prepared in this way duboisin is more poisonous than in solution, because of the greater length of time it is kept in contact with the ocular surfaces, and the relatively greater proportion which is absorbed. Convenient as it is for refractive purposes to have a mydriatic, which so quickly paralyses the accommodation, its employment is too frequently attended with unpleasant consequences to render its use desirable.

ATROPINE—ANTISEPTIC SOLUTIONS.

For some time I have been under the impression that the irritation caused frequently after the prolonged use of atropia, partaking frequently of a species of granular ophthalmia, was owing to the fungus which so readily forms in solutions of this alkaloid. With a view to counteracting this, I had already used solutions to which an antiseptic (salicylic acid) had been added, when the notice appeared in the *Ophthalmic Review* (p. 58) on the observations of Kroemer on this subject. I may say that I think I can bear out the conclusions at which he arrived. I fancy, certainly, that solutions made with salicylic or carbolic acid are better borne than the ordinary aqueous solutions. I have noticed also, though not invariably, that in a case when the watery solution had occasioned irritation it has become lessened or subsided on the substitution of the antiseptic solution. It seems to me that those cases in which, perhaps, one application is followed by œdema and swelling of the lids—a genuine atropin erysipelas—belong to a different category to those resulting merely from the prolonged use of atropine for sometimes weeks or months. The former is more of the character of an idiosyncrasy.

A good plan to prescribe atropine, I believe, is with vaseline. In some cases it is certainly better tolerated in this way, and the vaseline is aseptic.

HOMATROPINE.

As is well known this drug is a quick pupil dilator, and possesses the advantage that its effects pass off rapidly. This is of course of great value for ophthalmoscopic purposes, and in this manner it will replace atropia. If, moreover, it proves from the rapidity with which its effects vanish, less liable to produce glaucoma than atropine it will possess another advantage. Enough is not known at present on this point to justify an opinion. As a paralyser of accommodation its power (2 gr. solution) is feeble, and cannot be relied upon sufficiently for refractive purposes. The insertion of atropine after its use demonstrates this in the case of hypermetropia, by revealing a further amount of latent hypermetropia.

HYOSCINE.

This alkaloid is as yet not much known. My own experience with it up to the present is not extensive, but as it possesses qualities which will probably bring it into vogue, I refer briefly to it here. Two salts of hyoscine have been supplied to me—a bromide and an iodide. At first I used a solution of the strength of the ordinary atropia one (2 gr. to 1 oz.), but after reading the abstract of a paper by Emmert,* of Berne, on this alkaloid, it appeared to be unnecessary to do so. He states that a drop of $\frac{1}{10}$ % hyoscine solution is more rapid and more manifest on the pupillary sphincter and the accommodation than a drop of atropine solution of $\frac{1}{2}$ %. I can bear out this statement as to the rapidity of action on the pupil, as dilatation certainly takes place quicker than with atropine. I do not know, however, that its effect passes off in a much shorter time than atropine; nor does my experience allow me to say anything as to its

*Abstracted from the Archiv. für Augenheilkunde, in the Ann. d'Oculist. vol. ii., 1882, p. 51, and Practitioner.

efficacy as an accommodation paralysers. Undoubtedly it is a powerful pupil dilator, and it is asserted to be more serviceable for breaking down iritic adhesions than the other mydriatics. In one case in particular, with numerous adhesions, which yielded little to atropine (2 gr. and, I think, 4 gr. solution), and with no appreciable change in the vascularity of the ocular surfaces, and this notwithstanding the internal administration of hydrarg. perchlor; here the substitution of (1 in 1,000) hyoscine solution produced a somewhat wider dilatation of pupil, and the rapid disappearance of the surface vascularity.

The present price of the drug is high, but independently of the necessary reduction with increased demand, the weakness of the solution used materially reduces the cost. It should be added that Emmert, in his paper, refers to the hydriodate of hyoscine.

IODOFORM.

a. Purulent Ophthalmia.—Shortly after the appearance of Dr. Grossman's article in the April number of the Review (p. 141) a case presented itself, in which I decided to use this remedy advocated by him in purulent ophthalmia. Its application was not attended with the happy results recorded by him, and subsequently by Mr. Priestley Smith (May, p. 184), Surgeon-Major Maconochie (August, p. 271), and Dr. Dujardin (p. 307). It is the only case of the kind in which I have employed iodoform, but I notice in the last number of the Review that Deutschmann's experience is also at variance with others in this respect.

The patient was a woman aged about 45, under treatment for blenorrhœa of the lachrymal sac; the canaliculus had been slit up, and the duct probed and a zinc lotion ordered. One day, however, she appeared with swelling and œdema of the lids and a copious purulent discharge from the conjunctiva; the cornea was then bright and transparent. During the time she was making up her mind to become an in-patient

at the Infirmary, the cornea became affected, and on her admission three or four days after the conjunctiva was inoculated the cornea was hopelessly destroyed. The iodoform treatment was at once commenced and entrusted to the hands of a most careful nurse. Instead, however, of the discharge becoming lessened, it seemed, if anything, more copious. After two or three days it was therefore abandoned and a lotion of boracic acid (20 gr. to the ounce) substituted. Under this latter, the quantity of the discharge rapidly diminished, its thick, purulent character changed, and the œdema of the lids and swelling of the conjunctiva disappeared.

b. Granular Pannus.—In a few cases in my hands iodoform has proved of service. It has been used as an ointment with vaseline, or sometimes as a powder with sugar of milk (1 to 5). In two recent cases, and especially in one, has it been valuable.* In this latter instance there was a fairly dense pannus of the greater part, especially at the upper portion, of both corneæ. Granulations were present in both eyelids. The iodoform powder was applied daily in the following manner:—Everting the eyelids, the powder was taken up with a camel's hair brush, applied to the conjunctival surface freely, and well brushed in. No pain or discomfort is experienced after the application, and this if it proves serviceable in other cases and in granular ophthalmia generally, will be a great advantage over the other methods of treatment.

BORACIC ACID.

In this remedy we possess, I believe, one of the best applications in cases of purulent and catarrhal ophthalmia, and it is of service besides in other ocular inflammations. It is antiseptic, and whilst acting prejudicially on the micro-organisms present in purulent and other ocular secretions, it checks discharge and promotes recovery, generally rapidly, without the pain and discomfort which attend the strong astringent applications.

* In two other instances since this was written.

a. Ophthalmia Neonatorum.—In this class of cases it is used in the following manner :—The eyes are desired to be cleansed with a piece of linen and tepid water, and then every two or three hours the eyes are to be well bathed with the lotion, care being taken to ensure its entering the eye by separating the lids, and squeezing in lotion from a portion of linen which is saturated with the boracic acid solution. Syringes are not recommended as they require more careful use than the mother's of infirm patients are generally able or willing to give, and, in any case, their use is not without danger. Vaseline is applied along the edges of the lids, after the bathing of the eye is completed. I have used this boracic acid treatment now in a large number of cases, and am satisfied as to its value. The discharge quickly becomes diminished, and in my experience the cases recover more quickly than under other modes of treatment. The strength of boracic acid lotion employed varies from 15 gr. to 25 gr. to the ounce of water.

b. Catarrhal Ophthalmia.—Boracic acid is very useful in these cases. Recently several instances of catarrhal ophthalmia have come under my notice of a very severe type, and with a tendency to invasion of the cornea. Often they have been monocular, and I should have hesitated to have regarded some as non-gonorrheal, had I not been able to satisfy myself as to the freedom of the patient from urethral disorder. These cases have done well under the boracic acid treatment. The strength of the lotion used varies ; in ordinary instances of catarrhal ophthalmia 10 gr. to the ounce will often be sufficient, whilst in others where the discharge is more purulent a stronger solution is required (15 gr. to 25 gr. to the ounce).

In some cases, also, of phlyctenular ophthalmia, the boracic acid lotion is of service, and occasionally it may be found preferable, perhaps, to employ the remedy as an ointment with vaseline instead of as a lotion.

(To be continued.)

J. H. DE HAAS (Rotterdam). **The Conversion of Light into Visual Impressions.** *Klin. Monatsblätter für Augenheilkunde*, July, 1882, p. 219.

In the form of a letter to a colour-blind friend, the author expounds a theory of the mode of action of light upon the retina, and of the nature of colour-blindness.

Vision depends upon certain changes in the brain produced by the influence of light on the ends of the optic nerves. Although this influence may cause changes which induce a deviation of the magnetic needle, that is no proof that the nerve current and the galvanic current are identical. It causes also an acid reaction in the nerve tissue, which disappears during the period of repose. These and other changes may represent only a part of the energy of the light rays, which might be termed the useless effect, while the actual nerve current to the brain would be the useful effect. The principal changes are only to be obtained in combination with the subsidiary, just as in the telegraphic apparatus no action is possible without the evolution of heat in the connections.

In man and animals the retina assumes a purple tint on remaining in darkness; under the influence of light the colour turns to rose, then to yellow, and finally disappears. Upon the discovery of this colour-change, which depends upon a chemical alteration in the nerve substance, it was at once assumed that chemical action was the origin of the nerve current, and this was believed all the more readily when it was found possible to fix permanent photographic pictures upon the retina. But this chemical hypothesis was overthrown by the consideration that the rods only and not the cones possess the purple colour, that there are animals which, having no rods, see without the aid of the purple, and that, in the human eye, the yellow spot, where vision is acutest, presents no cones and no purple.

It has been asked whether the yellow coloration of the yellow spot has not, perhaps, the same significance for the cones as the purple for the rods, but it must be remembered that the purple is found in the free extremities of the rods, while the yellow is in the nerve cells which lie between the cones and the nerve fibres; the cones themselves are colourless. Moreover, yellow absorbs the more highly refracted ether waves, and thus excludes the influence of the chemical rays of the spectrum.

The current in the optic nerve is therefore not to be explained by chemical changes in the retina. The influence of light is probably rather a mechanical one.

It is indubitable that in accurate vision the picture is formed in the outer segments of the rods and cones, which consist of a substance of high refractive power, not resembling nerve substance in chemical behaviour. Throughout the whole of the Animal Kingdom this outer segment of the rods and cones is built up of a number of plates or discs, placed one upon the other so that their flat surfaces are transverse to the long axis of the cone. The thickness of these plates is given differently by different observers in different classes of animals, but the measurements lie in all cases between 0·0009 mm. and 0·0002 mm. The index of refraction varies from 1·33 to 1·5, and it is noteworthy that it is different in different animals; moreover, it is, in the author's opinion, somewhat lower in the cones than in the rods of the same retina. Now the lengths of the ether-waves in the different parts of the solar spectrum vary in round numbers from 0·0020 mm. to 0·0003 mm., the light-waves ranging from 0·0007 mm. to 0·0004 mm. These figures represent the ether-waves in the air. If we reduce them by one-third or one-fourth we obtain their dimensions in the rods and cones of the retina, and these dimensions correspond pretty closely with the ascertained thickness of the discs of which the outer segments of the rods and cones are built up. It may be assumed that when the length of the light-wave is identical with the thickness of a disc this latter will be set in vibration by it, and in this vibration we have the mechanical influence which excites the nerve current.

Comparative anatomy and embryology teach us that all sensory apparatus ends in organs built of epidermal tissue, which is differentiated so as to be fitted for the reception of sound-waves in one place, of ether-waves (light and heat) in another, of pressure in a third, and we may expect that all varieties of nerve-currents will prove to be related to each other in like manner. In the lowest classes of animals we find, where we might look for an eye, only a pigment mass devoid of anything corresponding to a cornea or lens, and, beneath this, a group of plates or discs of highly refracting substance, connected with a more or less distinct nerve fibre. Only the longer ether-waves

can pass through the pigment, and thus it seems that we have here an eye capable only of receiving heat-rays. Further research may not improbably discover organs differentiated for heat, for red, orange, yellow, and other coloured light-rays. If we could examine animals in spaces to which only ether-waves of a given length were admitted—*i.e.*, spaces illuminated by given colours—we might ascertain which portions of the spectrum the thickness and refractive power of their discs enables such animals to perceive.

It is supposed that the rods are adapted for the perception of white light, and the cones for colours; the differences which are discoverable in the number and thickness of the discs in the two organs accord with this supposition. The rods possess the thinnest discs with the highest refraction, and these would vibrate to the violet end of the spectrum and induce the sensation of light merely. Again, the nerve-fibres with which they are connected are much finer in man and some of the higher animals than those connected with the cones. The nerve-fibres from the cones are distributed to the granular layers of the retina, and these appear to be most developed in those animals which possess the largest proportion of cones. In those animals in which there is a coloured oil-globule so placed with regard to the outer segment of the cone as to admit only one kind of coloured light, the nerve fibre appears to be less compound than in man and others, where no such means of exclusion exist, and in the latter case the other parts of the retina also are more highly developed. In these more highly developed classes it appears that a single cone must be capable of receiving the stimulus of different colours separately and in combination, and this is explained, in the author's opinion, by the presence in one and the same cone of discs of different thicknesses and refractive powers, such as would correspond to light-waves varying in length from 0·0007 mm. to 0·0004 mm.

In support of this theory of the differentiation of the discs for the reception of light-waves of different lengths, Haas states that the discs of the cones are of greater thickness and lower refractive power than those of the rods, and thereby less fitted for the violet end of the spectrum than the latter. Where the cones are provided with differently coloured oil-globules he believes that he has been able to observe corresponding

differences in the plates, and where the oil-globules are absent—*i.e.*, where each cone must respond to various colours—he has seen discs which, though similar in thickness, varied in refraction. Again, in some of the lower animals the discs are alternately thicker and thinner, more and less highly refractive, rose coloured and colourless; in others they steadily increase in thickness from one end of the row to the other without change of diameter or refraction.

The theory serves to explain certain of the phenomena of vision. Under a very weak illumination, as for instance on a dark evening, the periphery of our retina has a better perception of form than the yellow spot; the yellow spot unlike the rest of the retina consists of cones only, and these have a smaller number of discs than the rods, and are consequently less fitted for the reception of a very weak light-stimulus than the latter. So in nocturnal animals of all kinds the number of discs is much greater than in the allied species which are active by day. Again we know that a given colour may create under a more intense illumination the sensation of another colour, and may ultimately be seen as white; the vibrations induced in certain of the discs by a weak illumination may, when increased in amount by a stronger illumination, induce vibrations in the contiguous discs, and these, although independent of any direct action of light upon themselves, will call up the sensation of their own proper colours, which, being added to the original sensation, will falsify our judgment concerning the nature of the stimulus. Further, it may be supposed that very active vibrations in the discs of one retinal element would to some extent cause similar vibrations in the discs of the adjacent elements, and this would explain the phenomena of irradiation.

Again, the colour-sense is disturbed by an increase of pressure within the eyeball. May not the thickness of the discs be so modified by the pressure as to disturb their relations to the various colour-waves.

What, then, is the means of connection which enables the various kinds of vibration received by a single cone to be converted into so many different kinds of nerve-currents? In the lower animals fine nerve fibres pass along the cones as far as the extremity of the outer segment, and Haas believes that something similar is discoverable in the higher animals; when,

with the first commencement of post-mortem changes, the outer segment of the cone separates from the inner it leaves a remnant of its envelope attached to the latter, and in it fine lines are perceptible which may be the continuations of nerve fibres; the highest powers of the microscope approach their limit in examining these, but it is certain that the fibres from the cones are thicker than those from the rods, which probably indicates that they are compound, and therefore fitted to conduct different vibrations.*

Finally, the author suggests that colour-blindness may depend upon an absence of the discs adapted for the reception of certain light-waves, and that with this defect an imperfect development of other retinal layers would probably be associated.

CH. AEBY. Petit's Canal and the Zonule of Zinn in Man and Vertebrate Animals. *Von Graefe's Archiv.*, XXVIII., I., p. 111.

The controversy as to Petit's canal is an old one, and even so recently as 1880 Gerlach, relying on the appearances presented by meridional sections declared that no such canal exists, and that the zonule consists of fine bundles of fibres separated by open interspaces. To rebut this it is only necessary to inject the canal after preparing the parts in such a way as to exclude any artificial closing of the supposed apertures by hardening processes or otherwise.

Aeby employs eyes which have remained two or three days in the dead body, and thus suffered some degree of spontaneous maceration; the cornea and iris being removed a little pressure then causes the separation and escape, in one mass, of lens and vitreous with zonule and hyaloid entire. It is easy then by inflation with air, or better by injection with a coloured

* Is it necessary to assume the existence of distinct conductors for the different kinds of vibrations which may occur in a single cone? The diverse and complex sound-waves produced by striking a chord on the piano are transmitted perfectly by a single rod of wood. A multiplicity of conductors from the retina is demanded by the *form*-sense, so that the *locality* of each cone-impression or rod-impression may be distinguished separately, but is there reason for supposing that this is necessary in the case of the different colour-waves, apart from differences of locality? P. S.

non-diffusible fluid, while the specimen lies in water, to demonstrate the absence of any aperture in the uninjured zonule. At a later stage of maceration the injected fluid will pass inwards so as to separate and raise the lens from the vitreous. At the same time it is demonstrable that the hyaloid membrane envelopes the entire vitreous, including its lenticular surface.

Ordinary maceration will not separate the zonule from the hyaloid, but 24 hours' soaking, in a moderately strong solution of hydrochloric or nitric acid will do so completely in the form of an isolated membrane, which is manifestly one of the least destructible tissues of the body.

The existence of Petit's canal as a closed space is indubitable, but it has no independent structure of its own; it is simply the angle which occurs at the junction of the lens-capsule with the hyaloid, closed in by the zonule.

The appearance of separate fibrous bands in meridional sections is due to the plicate disposition of the membrane, the fold at the top and bottom of each furrow standing out as a distinct band; the reality of this is best seen in sections made tangentially to the lens-margin—*i.e.*, transversely to the furrows of the zonule.

The transparent contents of the eye may, therefore, be regarded as a single system comprising three parts: the vitreous body completely enclosed in its hyaloid membrane, the lens enveloped in its capsule, and the zonule forming an annular connection between the two.

F. DIMMER (Vienna). **The Diagnosis of Detachment of the Vitreous.** *Klin. Monatsbl. für Augenheilk.*, August, 1882, p. 260.

Detachment of the vitreous is well known anatomically, but its ophthalmoscopic signs are of doubtful character, and only a very few clinically observed cases are on record.

It is known to occur after injuries, such as cataract extraction and the intrusion of foreign bodies, and in such cases appears to happen both primarily, from immediate loss of vitreous, and secondarily, from shrinking of the degenerated vitreous body; it occurs also in uninjured eyes, most frequently

in connection with high degrees of myopia ; also with anterior staphylomata. It may arise from the intrusion of serous, purulent, or sanguineous effusions or new growths, between the vitreous and retina.

Clinically, detachment of the vitreous is very generally hidden from inspection by the disorganising changes which precede or accompany it. The cases in which it may be observable are chiefly those of cataract extraction and myopia. Graefe believed it to be sometimes recognisable in eyes with posterior staphyloma as a uniform and extensive cloudiness in the vitreous chamber, appearing suddenly, possessing a certain amount of mobility, and giving a grayish reflex. Weiss and Galezowski have described it as a grayish or whitish crescentic line near the inner margin of the papilla, which, on parallaxic movements, is seen to lie in a plane anterior to the retina. De Wecker, to whom the author does not refer, states on the other hand that he has failed, after very careful search, to detect vitreous detachment by these signs—(Graefe-Saemisch, iv. p. 717). The ophthalmoscopic diagnosis of the condition certainly remains doubtful. The question would generally lie between detachment of the retina, detachment of the vitreous, and membranous opacity in the substance of the vitreous. The author relates two examples observed in Arlt's clinique which throw some light on the subject.

I. A man, aged 64, underwent linear extraction of a ripe senile cataract ; immediately after discision of the capsule the zonule ruptured through straining of the patient, and a vitreous bead protruded ; the lens was withdrawn by the wire scoop, with only slight loss of vitreous. For eight days the lips of the incision were held apart by a protusion of vitreous, but nineteen days after the operation the eye was pale, the wound well healed without incarceration of iris, and $V = \frac{20}{100}$, and two months later, $\frac{20}{30}$. A little later vision began to fail without sign of inflammation, and fourteen months after the operation the following conditions were observed :—Incision smoothly healed, its middle portion being in the corneo-scleral junction ; coloboma 10 mm. wide ; in the coloboma a delicate membrane united below at one spot to the pupillary margin. The ophthalmoscope shows a cyst-like body hanging from above and reaching down-

wards as far as the middle of the coloboma, grayish at its lower limit, but above this admitting the passage of light from the fundus ; at its outer part is a constriction in which the grayish colour is pronounced ; with movements of the eye it oscillates a little, but never sinks ; its anterior surface is smooth, devoid of vessels, and lies not far behind the plane of the iris ; laterally it disappears behind the iris ; its extent backwards cannot be determined ; disc hazy ; a large detachment of the retina below. The retinal vessels can be followed upwards from the disc till they reach the boundary of the cyst-like body, where they make a small bend ; above that they are indistinct, but certainly lie behind the cyst in the plane of the fundus. T slightly diminished.

In the diagnosis of the nature of this cyst-like body a detachment of the retina was excluded by the absence of vessels on its surface and their presence behind it ; a membrane in the substance of the vitreous was excluded by the peculiar bladder-like appearance and the fixity—thus a detachment of the vitreous was established.

The bending of the vessels at the margin of the cyst the author attributes to a difference in refraction between the vitreous body and the fluid occupying the space produced by its detachment.

The occurrence of the detachment was not, as in some cases, a direct result of loss of vitreous at the operation, for the visual result was for a time excellent ; a subsequent exudation of serous fluid, or a shrinkage of the vitreous with consequent transudation of fluid between it and the retina, was probably the cause.

II. A man, aged 29, presenting the results of old iridocyclitis with extensive synechia and raised tension, underwent repeated iridectomies ; the lens was injured and became absorbed ; a coloboma nearly equal to the upper half of the iris was obtained. The ophthalmoscope showed a cyst-like body closely corresponding in form and position to the one before described, but blood-red ; it had a similar limited mobility and partial transparency, and similar constrictions or folds at its lower margin.

It was not possible in this case to discern the retinal vessels behind the mass, but the non-occurrence after a long period of

any change in the colour of the cyst, and the non-appearance of any vessels on its surface, seemed to prove it to be a detachment of the vitreous and not of the retina, the space between vitreous and retina being filled with blood.

An instance of detachment of the vitreous diagnosed with the ophthalmoscope, and confirmed after excision, was recently brought before the Ophthalmological Society by Dr. Swanzy. (*Vide O. R.*, June, p. 229).

R. ULRICH (Strassburg). Retrobulbar Hæmorrhage simulating Detachment of the Retina. *Klin. Monatsbl. für Augenheilk.*, July, 1882, p. 242.

Ulrich records the case of a boy, aged 9, in whom a blow upon the eye was followed by a swelling and discolouration of the lids, protrusion of the eyeball, and the ophthalmoscopic appearance, as diagnosed by himself and several other skilled observers, of a detachment of the retina at the lower part. Further examination showed, however, that the visual field was entire, which appeared to exclude a retinal detachment, and to indicate a general protrusion inwards of the wall of the eyeball, presumably caused by pressure upon its external surface by extravasated blood. The retinal vessels were extremely tortuous; the disc-margin and retina clouded; myopia at the yellow spot = 6 D; movements of the eye restricted, especially downwards and outwards.

An exploratory puncture evacuated only a teaspoonful of blood, and when twice repeated, at intervals of about fourteen days, failed to reach the retained blood; the swelling which followed these attempts caused an increased protrusion of the eye, and the myopia, which had lessened, became higher again. Finally, by dissecting down, from the outer side, a round, tightly-filled cyst was found behind the eye and emptied of about a tablespoonful of blood. The protrusion of the eye disappeared at once. Finally, the eye recovered normal vision and refraction, and no ophthalmoscopic sign of the indentation of the tunics remained. The myopia had evidently been due to the distortion of the globe.

The cyst, being partly emptied by the first exploratory puncture, had escaped the subsequent ones, which, for safety,

were kept near to the floor of the orbit; in another such case it would be well to approach the cyst from the inner side.

Cases of retinal detachment with abscess in the orbit are on record. In one of these there was no corresponding defect in the visual field. Ulrich suggests that this also may have been a case of distortion of the wall of the eye.

RECENT LITERATURE.

A. RETINA. OPTIC NERVE. CENTRES.

- AYRES. Zum chemischen Verhalten des Sehpurpurs.
Untersuch. a. d. phys. Inst. zu Heidelberg, II., 4, p. 444.
- BERGER. Ueber Bindegewebsbildungen in der Sehnervens-
papille und der Netzhaut.
Klin. Mon.-Bl., August, 1882, p. 269.
- CHITTENDEN. Beiträge zur Histochemie des Sehepithels.
Untersuch. a. d. phys. Inst. zu Heidelberg, IV., p. 438.
- DERIGS. Ueber Retinitis pigmentosa. Inaug.-Diss.
Bonn, 1882.
- EDMUNDS, W. Contribution to the pathology of double optic
neuritis.
St. Thomas's Hospital Reports. New Series. Vol. X.
- EMMERT. Scotome par éclipse de soleil.
*Revue Médicale de la Suisse Romande, 15th August,
1882, p. 395.*
- GALEZOWSKI. La migraine ophthalmique est une maladie des
vasomoteurs de la rétine et du centre visuel qui peut
aboutir à une thrombose.
Gaz. Méd. de Paris. Nr. 26.
Revue d'Ocul. du Sud-Ouest, III., 6, p. 140.
- HERMANN. Beitrag zur Casuistik der Farbenblindheit. Inaug.-
Diss.
Dorpat, 1882.

HILBERT. Eine eigenthümliche Pigmentanomalie des Augenhintergrundes.

Klin. Mon.-Bl., August, 1882, p. 276.

HORSTMANN. Ueber Sehstörungen nach Blutverlust (Vortrag gehalten in der Gesellschaft für innere Medicin, 19th of June, 1882).

Deutsche med. Wochenschr. Nr. 28.

KLEIN. Retinitis.

Eulenburg's Real-Encycl. IX., p. 451.

KNIES. Zur Frage der Sehnerven-Injection.

Klin. Mon.-Bl., August, 1882, p. 287.

KUEHNE. Beobachtungen zur Anatomie und Physiologie der Retina.

Untersuch. a. d. phys. Inst. zu Heidelberg, IV., p. 280.

Modern Theories of Colour.

The Lancet, August, 1882, p. 275.

NETTLESHIP, E. Cases of injury to the optic nerve.

St. Thomas's Hospital Reports. New Series. Vol. X.

PASSAZKI. Pathologisch-anatomische Veränderungen der Netzhaut bei einigen Allgemeinerkrankungen des Auges. Inaug.-Diss.

Petersburg, 1882.

RAMORINO. Distacco retinico curato con le iniezioni ipodermiche di pilocarpino. (Congresso sanitario degli ospedali civili. May, 1882).

Bolletino d'Oculistica, IV., 11, p. 154.

RUMSCHEWITSCH. Einseitige pigmentirte atrophische Sehnervenpapille.

Klin. Mon.-Bl., August, 1882, p. 279.

SOURY. Développement du sens des couleurs chez l'enfant, le sauvage et le barbare.

République française, 27th June, 1882.

STENGER. Die cerebralen Sehstörungen der Paralytiker.

Archiv. für Psychiatrie, XII., 1.

STILLING. Untersuchungen über den Bau der optischen Centralorgane. 1st part: Chiasma and Optic Tract. With 10 plates.

Kassel and Berlin, 1882. *Theodor Fischer*.

- STREHL. Zur Casuistik des sog. Flimmerscotoms.
Mitth. a. d. K. Univ.-Augenkl. zu München, I., p. 97.
- TARTUFFERI. Studio comparativo del tratto ottico e dei corpi genicolati nell' uomo, nella scimmia e nei mammiferi inferiori.
Torino, 1882.
- TARTUFFERI. Determinazione del vero corpo genicolato anteriore dei mammiferi inferiori e studio comparativo del tratto ottico nella serie dei mammiferi. (Comunicazione preventiva).
Arch. p. l. Scienze Med., IV., 5.
- TARTUFFERI. Contributo anatomico sperimentale alla conoscenza del tratto ottico e degli organi centrali dell' apparato della visione.
Torino, 1881.
- The rapidity of visual perception.
The Lancet, August, 1882, p. 319.
- B. UVEAL TRACT. VITREOUS AND AQUEOUS. LENS.**
- AGNEW AND WEBSTER. Cases of acute glaucoma.
N. Y. Med. Record, August, 1882, p. 146.
- BECKER. Contribution à l'anatomie du cristallin et de la cataracte.
Rev. Gén. d'Ophth., I., 6 p. 273.
- BRAILEY, W. A. On some points in the anatomy of the ciliary body.
Brit. Med. Jour., Sept. 23, p. 577
- CORNWELL, H. G. Purulent cyclitis from septic embolism of the eye, in a case of phlegmonous erysipelas.
N. Y. Med. Record, August, 1882, p. 180.
- COUCE Y LANDA. Atresia pupilar considerable del ojo derecho, sintomatica de una iritis parequimatosas.
Rev. Espec. de Oftal., May, 1882.
- DIMMER. Zur Diagnostik der Glaskörperablösung.
Klin. Mon.-Bl., August, 1882, p. 259.
- EVERSBUSCH. Beiträge zur Genese der serösen Iriscysten.
Mitth. a. d. K. Univ.-Augenkl. zu München, I., p. 1.

EVERSBUSCH. Klinisch-anatomische Beiträge zur Embryologie und Teratologie des Glaskörpers.

Mitth. a. d. K. Univ.-Augenkl. zu München, I., p. 37.

HAAS. Statistik über dreihundert in der Augenklinik in dem Zeitraum von 1870 bis 1880 ausgeführte Iridectomien.

Mitth. a. d. K. Univ.-Augenkl. zu München, I., p. 72.

HODGES, F. H. Preliminary iridectomy in extraction of cataract.

Brit. Med. Jour., September, 1882, p. 424.

MONREAL. La iridectomia ántes de la operacion de la catarata.

Oftalmologia practica, I., 4, p. 90.

MOORE, J. W. Pyæmic panophthalmitis resulting from embolism in mitral stenosis.

Dublin Med. Jour., September, 1882, p. 189.

ORMSBY, L. H. Medullary sarcoma of the eye.

Dublin Med. Jour., September, 1882, p. 247.

ROBINSKI. Structur der Augenlinsenröhren.

Centralbl. f. d. med. Wiss. Nr. 28.

C. CORNEA. CONJUNCTIVA. SCLERA.

ARMAIGNAC. Étiologie et traitement de l'ophthalmie purulente chez les nouveau-nés et les adultes.

Rev. d'Ocul. du Sud-Ouest, III., 6, p. 121.

Egyptian Ophthalmia.

Med. Times and Gazette, August, 1882, p. 247.

HARDER. Zur Lehre vom Pterygium.

Mitth. a. d. K. Univ.-Augenkl. zu München, I., p. 247.

HEISRATH. Ueber die Behandlung der granulösen Bindehautentzündung mit tiefen und ausgedehnten Excisionen.

Berl. Klin. Wochenschr. Nr. 28 and 29.

NUEL. Des glandes tubuleuses pathologiques dans la conjonctive humaine.

Annal. d'Oculist, July—August, 1882, p. 6.

REINHARD. Vorderkammerdruck und Substanzverluste der Cornea unter Atropin und Eserin. Inaug.-Diss.

Basle, 1882.

- SASSE. Zur Chemie der Descemet'schen Membran.
Untersuch. a. d. phys. Inst. zu Heidelberg, IV.,
p. 433.
- STREATFEILD, J. F. A congenital anomaly of the conjunctiva,
 hitherto unreported.
The Lancet, September, 1882, p. 346.
- TARTUFFERI. Sull' anatomia patologica della cornea nel
 glaucoma.
Giornale d. R. Accad. di Med. di Torino, May—
June, 1882.
- WECKER, DE. L'ophthalmie purulente factice produite au
 moyen du jequirity ou liane à reglisse.
Annal. d'Oculist, July—August, 1882, p. 24.

D. ACCOMMODATION. REFRACTION. MOTOR
 APPARATUS.

- ALBERTOTTI. Determination experimentale de la grandeur de
 l'image ophtalmoscopique renversée.
Archives Italiennes de Biol., I., fasc. 3.
- BEER. Einleitung in die höhere Optik. Bearbeitet von Lang.
 2nd Edition.
Brunswick, 1882.
- CARL THEODOR, R. H., DUKE IN BAVARIA. Ueber einige
 anatomische Befunde bei der Myopie.
Mittheilungen a. d. K. Univ.-Augenkl. zu München, I.,
p. 233.
- HIRSCHBERG. Réfraction.
Eulenburg's Real-Encycl. IX., p. 379.
- JAVAL. Seconde contribution à l'ophtalmométrie.
Annal. d'Oculist, July—August, 1882, p. 33.
- VELARDI. Dell' astenopia accomodativa.
Bolletino d'Oculistica, IV., 11, p. 158.
- WECKER and MASSELON. Astigmometre.
Annal. d'Oculist, July—August, 1882, p. 44.

E. EYELIDS. LACHRYMAL APPARATUS. ORBIT.

KROLL. Ein Beitrag zur Pathologie und Therapie der Blepharitis simplex.

Berl. Klin. Wochenschr. Nr. 27.

NETTLESHIP, E. Cases of orbital cellulitis presenting unusual features.

St. Thomas's Hospital Reports. New Series. Vol. X.

ORTIZ. Tumor gomoso ulcerado del párpado superior tratado con la tintura de iodoformo.

Oftalmologia practica, I., 4, p. 80.

TARTUFFERI. Le glandule di Moll studiate nelle palpebre dell' uomo e degli altri mammiferi e comparate alle tubolari cutanee. (Dal laboratorio del Prof. Francesco Magni).

Archivo per le Scienze Mediche, IV., 5.

WECKER, DE. Une nouvelle opération du ptosis.

Annal. d'Oculist, July—August, 1882, p. 29.

F. MISCELLANEOUS.

AYRES, W. C. The development of the eye.—III.

N. Y. Med. Jour., September, 1882, p. 225.

BATTESTI. De la galvanocaustique en chirurgie oculaire.

Thèse. Paris, 1882.

BERGER. Beiträge zur Anatomie des Sehorgans der Fische.

Morphol. Jahrb. VIII., p. 97.

Birmingham and Midland Eye Hospital.

Brit. Med. Jour., August, 1882, p. 332.

DURLACH. Beobachtungen über Miss- und Hemmungsbildungen des Auges. Inaug.-Diss.

Bonn, 1882.

EVERSEBUSCH. Bemerkungen über die Anwendung der Antiseptica in der Augenheilkunde.

Mitth. a. d. K. Univ.-Augenkl. zu München, I., p. 127.

GILLET DE GRANDMONT. De la vision des couleurs au point de vue de médecine légale.

Ann. d'Hyg., publ. July, 1882.

KUEHNE. Beiträge zur Optochemie.

Untersuch. a. d. phys. Inst. zu Heidelberg, IV., p. 169.

KUEHNE. Bemerkungen zu Herrn Hoppe-Seyler's Darstellung der Optochemie.

Untersuch. a. d. phys. Inst. zu Heidelberg, II., 4, p. 488.

PENNA, DE LA. Higiene ocular. Sobre el alumbrado publico por la luz electrica.

Oftalmologia practica, I., 4, p. 73.

Presentation of the Middlemore Prize.

Brit. Med. Jour., August, 1882, p. 321.

RITZOL. Blessure de la cornée, de l'iris et du cristallin, par un fragment de capsule. Extraction du corps étranger et guérison complète.

Rev. d'Ocul. du Sud-Ouest, III., 6. p. 131.

ROTHMUND AND EVERSBUSCH. Einrichtung der Klinik, hygienische Verhältnisse, klinische Statistik, &c.

Mitth. a. d. K. Univ.-Augenkl. zu München, I., p. 282.

ROTHMUND. Ueber den Unterricht in der Ophthalmologie.

Mitth. a. d. K. Univ.-Augenkl. zu München, I., p. 270.

SCHELSKE. Versuche über Farbenmischungen.

Ann. d. Physik und Chemie, XVI., p. 349.

SCHUERMANN. Die Hygiene der Augen. Fragmentarische Mittheilungen aus dem Nachlasse des Verfassers.

Mitth. a. d. K. Univ.-Augenkl. zu München, I., p. 148.

UHTHOFF. Ein seltener Fall von gummöser Neubildung im menschlichen Auge.

Monatshefte f. prakt. Dermatol., I. 5, July, 1882.

Zehnter Bericht über die Augenheilanstalt zu Zittau für die Jahre, 1880 bis 1881. Erstattet von Otto Just.

A NEW TREATMENT FOR PURULENT CONJUNCTIVITIS.

BY H. LINDO FERGUSON, L.R.C.S.I., L.R.Q.C.P.,
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So much has been lately written in favour of the treatment of purulent conjunctivitis by iodoform that I felt much tempted to use it in several cases which have recently come under my notice, but several serious objections to it caused me to hesitate. Unless pure and very finely powdered, it is apt to cause very intense irritation of the conjunctiva, and though I have not used it in cases of purulent conjunctivitis, I have seen it produce such irritation when applied for ulcers of the cornea that I should prefer not to use it unless I were sure there was no other remedy capable of producing the same effect on the discharge. It is not easy to reduce the pure iodoform to a sufficiently fine state of subdivision ; and it has, moreover, a smell which is to many people nauseating when they are long exposed to it. Another very strong argument against the use of iodoform is that it is poisonous ; and the fact of there being several fatal cases on record of poisoning from iodoform dressing ought, I think, to be taken into consideration before applying it to the conjunctiva of children of tender age for ophthalmia neonatorum, as a very small amount of absorption might, in an infant, cause a fatal result.

The treatment we have been using at the Infirmary for many months past has been constant cleansing with an iced 4% solution of boracic acid, and, when the more acute stage is over, touching the conjunctiva with a 10-grain solution of nitrate of silver subsequently neutralised with a solution of salt.

Our results with this treatment were on the whole satisfactory, our observations coinciding with those of

Mr. Simeon Snell, published in the *Ophthalmic Review* for October; but convalescence was slow. Two cases under my care last June, children of five and seven respectively, were five weeks in the house, and for nearly four weeks had to be kept in the dark, owing to the intense photophobia from which they suffered.

It occurred to me that if the boracic acid were applied to the conjunctiva in a finely powdered state its action would be quicker and more certain, and its application in this way seemed to be free from the objections I had to the use of iodoform.

Briefly stated, the results of my observations have been:—1. That the application of the finely-powdered boracic acid to a discharging conjunctiva checks the discharge completely for a period varying from two to twelve hours, and in the milder cases the first application is sufficient to stop the discharge altogether. 2. When the discharge reappears it is usually less in amount and more watery in character, and a very few applications of the powder stop it entirely. 3. The conjunctiva is then red and succulent but dry, and if touched two or three times with a solution of nitrate of silver it rapidly returns to its normal state.

Of the following cases only one (Case 2) was treated in the infirmary. For the first day he was treated with iced applications and constant cleansing with boracic lotion; but as the chemosis was increasing and the discharge collected with great rapidity, I applied the powder on the second day, and the effect in checking the discharge was so satisfactory that I resolved to trust to it, and treat future cases as out-patients, merely telling them to return in the evening for a second application to check the discharge for the night. In case No. 4 the discharge did not reappear, but a second application was made as a precautionary measure. Cases 3, 5, 7, and 8 were all severe, 7 and 8 especially, and would without the powder have had to be treated as in-patients. Cases 5 and 7 had each four applications;

cases 2 and 8, each six ; and case 3 had in all ten. The evening applications were made by Mr. Walpole, our house-surgeon, to whom I am much indebted for the pains he took to carry out my views.

CASE 1. August 10th.—Owen C., messenger, presented himself, complaining of discharge from right eye, which had come on suddenly, three days before, after a history of probable infection. He was unable to work, and there was considerable muco-purulent discharge, the lids being spasmodically closed, and the cul de sac full of the discharge. Left eye was weak and watery, but there was no discharge from it. The lids of right eye were everted, the discharge carefully removed with a piece of dry lint, and the finely-powdered boracic acid shaken freely over the conjunctiva from a camel-hair brush, as calomel is applied to the cornea. The boy did not return to the dispensary, but the subsequent course of the case was traced by Mr. Walpole, who ascertained from him that the discharge was checked by the application of the acid for between two and three hours. When it returned it was thin and watery in character, and did not prevent his working, and caused so little inconvenience that he did not attend the dispensary.

CASE 2. September 5th.—Arthur D., baker, thinks he got something into his eyes. Discharge began from both eyes three days before he presented himself, with considerable pain and smarting. Lids and surrounding tissue are unusually large and loose, but lids are reddish. There is some chemosis and considerable photophobia ; the cul de sac contains a long string of creamy pus in both eyes. He was admitted, and iced boracic lotion used constantly to cleanse the eyes. September 6th.—Chemosis and photophobia increased ; discharge more profuse ; applied boracic acid at 12 o'clock. The discharge began to reappear at 5 p.m., and the acid was again applied, and was once again used at 9 p.m. September 7th.—Discharge thin and watery ; chemosis and photophobia less. Applied the boracic acid morning and evening. September 8th.—No discharge ; lids just glued ; acid applied once. September 9th and 10th.—No discharge ; sol. arg. nit. applied to conjunctiva, and on 10th he was discharged cured.

CASE 3. September 12th.—Esther J. has been attending

for some time for phlyctenular keratitis. On the 9th she had the peroxide of mercury ointment applied, both eyes being nearly well. On the 10th she was playing with a child who had a discharge from its eyes, and on the morning of the 11th, on opening the left eye, the mother says "a dessert spoonful of green matter. came from it." On presenting herself on the 12th she had a profuse green discharge from left eye; similar discharge from right, but less in amount. Boracic acid was freely applied to both, and the patient told to return at 7 p.m. The discharge did not reappear till 5 p.m., and at 7 the acid was again applied, and she was given the boracic lotion to use at night if the discharge reappeared. 13th.—Discharge less in quantity, and watery; used acid morning and evening. Till the 17th she attended twice daily, the discharge being checked from ten to twelve hours by each application of the powder. On the 18th the lids were merely glued; but the powder was used once. 19th.—No discharge. 23rd.—No discharge, but conjunctiva very succulent; sol. arg. nit. applied. October 7th.—Fresh keratitis, but has had no return of the discharge.

CASE 4. September 12th.—William M., aged 2, was brought on August 26th with severe muco-purulent conjunctivitis. Mother suffers from leucorrhœa, and her other boy, two years older, has lost his sight from ophthalmia neonatorum (was subsequently brought; both corneæ are staphyomatous, and opaque.) Sol. arg. nit. was used and the boracic acid solution given for home use. The mother, who was much alarmed, used it every half-hour till the 29th, when the discharge lessened, and on September 7th it was slight, but on September 12th it was worse. Pain and chemosis accompanied the discharge, which was now profuse. The powder was freely applied morning and evening. September 13th.—Discharge stopped. 14th.—Eyes merely glued this morning. Stopped attending. October 13th.—Child has been laid up with croup, but beyond occasional glueing of the lids in the morning has had no discomfort from eyes.

CASE 5. September 20th.—Jas. R., shoemaker. Severe muco-purulent discharge from both eyes, increasing for last seven days; complains of great pain in eyes and head; boracic acid applied; checked discharge for about three hours; applied again at 7 p.m. Was given boracic acid lotion to use during

night if discharge reappeared. 21st.—Said he had suffered intense pain in head after second application, and that he would not have it applied again; but questioning elicited that the pain came on between three and four hours after the application, simultaneously with the return of the discharge. The lids were carefully cleaned and the powder reapplied. 22nd.—Is much better, can look about, discharge nearly ceased, powder reapplied. 23rd.—No discharge; conjunctiva red and succulent, but dry; brushed with sol. arg. nit; no subsequent return of the discharge.

CASE 6. September 21st.—Ada C., aged 10. Right eye: catarrhal conjunctivitis of one week's duration. Very considerable discharge; boracic acid applied. 22nd.—Discharge quite stopped; sol. arg. nit. 23rd.—Conjunctiva red and velvety, but quite dry; sol. arg. nit. 26th.—Has had no return of discharge; told she might cease attendance.

CASE 7. October 5th.—Margaret D., aged 8. Last Sunday, October 2nd, was playing in bed with a neighbour's child who had a copious discharge from her eyes. On Monday, 3rd, had discharge and great pain in both eyes, which have since continued. The child presents a peculiar appearance, being very pale, except the eyelids, which are a bright pink, and closed. The upper lids are so swollen as to completely obliterate the fold below the orbital ridge, and are tense and tender to the touch. There is considerable purulent discharge in the conjunctival sac of both. The lids were with some trouble everted and cleaned. The corneæ were safe. The powder was freely applied. Told to return at 7 p.m., and to use cold water if the discharge reappeared in the meantime. At 7 p.m. mother states the discharge did not reappear for about two hours after the application, and has since been much less in quantity, and stringy; the eyes have been, and are still, easier. Powder reapplied and boracic lotion given for use during the night if necessary. 6th.—12 o'clock, no discharge: eyes were merely glued this morning; eyelids are now wrinkled and have lost the pink flush; eyes are much less painful; can look about; powder applied. 7 p.m., conjunctiva succulent, no discharge. 7th.—Lids were only slightly glued this morning, and are now the same colour as the rest of the face; sol. arg. nit. 12th.—Has had no return of discharge, eyes are, as the mother says, "just a bit weak."

CASE 8. October 10th.—Patrick D., coachman, father of last patient. Five days ago, on the morning of the day the child was brought to the dispensary he was fondling and caressing her; some hours afterwards felt a sudden pain in the left eye, which was very weak for the rest of the day. In the evening it began to discharge, and the discharge was considerable for three days, when the right eye began to burn and smart, and the same evening began to discharge. He presented himself last evening at the infirmary, and the lids were then much puffed, especially of left eye, which he could scarcely open himself sufficiently to render the cornea visible at all. He stated that the discharge was very copious, but he had taken pains to thoroughly cleanse the eyes immediately before presenting himself. Mr. Walpole, who saw him, applied the powder freely to both eyes. This morning (October 10th), at 8 a.m., he presented himself again, and said that for nearly half-an-hour after the application last night he suffered discomfort from the sensation of having dust in his eyes. At 1 a.m. he awoke with a slight discharge from left eye. Right was then glued, and discharge did not appear in it till about 4 a.m.; when seen there was very little discharge, and the powder was reapplied, the application being followed by less subsequent discomfort. At 12 o'clock I saw him at the dispensary, the lids were red and swollen, but he opened the eyes with ease, and there was only a very small flake of discharge in the cul de sac of each. This I removed, and reapplied the powder. At 7 p.m. he returned and said he had had discharge since 2 p.m., but he had been at his work all the afternoon. The powder was reapplied. October 11th, 7 p.m. Did not present himself this morning as he was at work; he has now no discharge from left, and the discharge is slight from right. The powder was applied to right, and the left was touched with the sol. arg. nit. October 12th.—No return of discharge from left. Slight discharge from right. Did not present himself till 7 p.m., having been at work all day. Mr. Walpole applied the nitrate of silver to both eyes. October 13th. Discharge still slight from right. Eyes very weak and watery. Powder applied to both eyes, though there was no discharge from left. October 14th.—Lids only slightly glued this morning. No discharge; sol. arg. nit. to lower palpebral fold. Lids

are not now swollen, and are their normal colour. October 15th.—No return of discharge; eyes merely looked a little red.

These are all the cases in which I have used the powder, except one, a case of ophthalmia neonatorum, which did not return after the first visit, and which I have been unable to trace. But I think the results the treatment has yielded are ample excuse for publishing such a small number. I could not, indeed, have collected so many in the short space of time since I first used the powder had we not had almost an epidemic of the disease. All the cases were distinctly purulent or of the severe muco-purulent type, and I should certainly have had to take cases No. 3, 5, 7 and 8 into the infirmary had I not been so satisfied with the result of the treatment in case No 2 that I felt sure it could be successfully carried out outside. In three of these cases treated as out-patients there was a distinct history of contagion, but fortunately there were no corneal complications in any of them when they presented themselves, and the improvement was so rapid in all cases that in none of them did any corneal lesion occur. In this first notice I will not comment at greater length on the cases, the notes of which speak for themselves, and will merely point out that with in-patients, as well as diminishing the times of treatment from a month or five weeks to a week or ten days, and thus greatly lessening the risk of corneal trouble, we shall by this method, owing to the effect of the acid in checking discharge and to its powerful antiseptic qualities, be able to treat these cases in the same wards as other patients without any fear of an epidemic breaking out. The advantages I claim for boracic acid over iodoform as an application to the conjunctiva are, that it is easily obtained pure, is more easily reduced to a very fine smooth powder, is exceedingly cheap, has no smell, is perfectly non-irritant, and is not poisonous. I am anxious that its use should have a trial at other hands than mine, and I trust that some readers of the Review will try it and make known their results.

A NEW REGISTERING PERIMETER.

BY PRIESTLEY SMITH.

My object in adding another to the many varieties of perimeter now in use has been to provide for a rapid and easy registration upon the chart by simpler means than those which have been hitherto employed.

In mapping the field of vision, whatever instrument be used, it is at present the universal custom, so far as I know, to let the test-object sweep the field chiefly in the direction of its meridians, travelling centripetally along a certain number of meridians in succession, so as to indicate on each the point at which it enters within the limits of the field. Where each observation has to be noted separately and transferred by hand to the chart or notebook, this is undoubtedly the best way of proceeding. But other ways are possible. The contour of the field might be correctly defined by moving the test-object in lines parallel with the vertical or horizontal meridian, and so mapped upon a corresponding chart, but the figure laid down in this way would present no evident relation to the fixation point, and would be inconvenient on that account. It may be defined also by causing the test-object to travel in circles concentric with the fixation point, and this system has the advantage that the circular motion is very easy to produce, and lends itself very readily to automatic registration.

If the field be swept in the ordinary manner, it is manifestly a mechanical problem of some difficulty to register automatically, for the curvilinear motion of the test-object upon the arc of the perimeter must be converted into a rectilinear motion on a smaller scale in the pencil or pricker.

In the registering perimeter invented by G. T. Stevens (*vide* Trans. Internat. Med. Cong., Lond., 1881.), this is effected by a series of toothed wheels; in the newer instrument by M. M. McHardy (*vide* O. R., March,

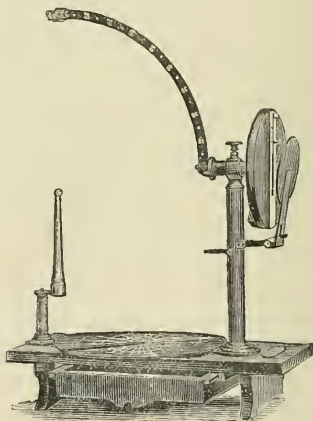
p. 107), by a cord traversing a series of pulleys. In both the movement of the pricker is completely automatic, and it would probably be impossible to devise any better mechanism for the purpose. In the newest instrument of all, by M. Blix (*vide* O. R., p. 382), the arrangement is simpler, but the situation of the chart and pricker behind the patient's head would appear, if one may judge without having used it, to place the operator in an unfavourable position for watching the patient's eye, and the absence of any arc or screen upon which to make supplementary observations in the ordinary way would seem likely to prove inconvenient.

When the test object is made to sweep the field in a series of concentric circles, the difficulty disappears. A registration which is practically automatic can then be effected without complex mechanism, for the pricker has merely to move round the chart in corresponding circles on a smaller scale. The way in which this is effected in my instrument will be readily understood from the following description and figure:—

The base of the perimeter is a strong wooden stand 19in. long by 8in. wide. It contains a drawer, in which lie the charts, squares of paper for test-objects, and coloured pencils for outlining the field, as defined for different colours.

At the one end of the base is a short metal support carrying a wooden pillar, which terminates above in a round knob. The patient rests his face lightly against the pillar, so that his eye stands vertically over the knob, and about an inch and a half above it. This is the simplest possible mode of fixation. It involves no adjustment in using, and gives, I find, a sufficient degree of fixity and support. Slight inclinations or rotations of the head cause a smaller departure of the eye from its correct position with this method than when a chin support only is used, because the fixed point of support is nearer to the eye; and throughout the whole of the examination the operator can see at a glance whether

the eye remains in the required position. At the other end of the base is a strong metal column, bearing the movable portions of the perimeter, viz., the axis carrying the quadrant, handwheel, and pricker, and the chartholder. The height of the instrument is adjusted when necessary to the eye of the sitter by means of two blocks of wood, which, according to the way in which they are placed, raise it one inch or two inches.



The quadrant is a flat strip of brass, presenting its edge to the eye under examination, and engraved on its two sides in intervals of five degrees: the figures are thus hidden from the patient, but visible to the operator. The test-object—a square of paper changeable at pleasure—is held in a little clip which slides on the quadrant; the latter is notched on its outer edge, so that the test-object is readily moved along it by ten degrees or five degrees at a time. The radius of the inner edge of the quadrant is 10 inches.

The revolving axis which carries the quadrant has fixed to its other end a wooden disc or handwheel eight

inches in diameter, by means of which it is rotated ; this wheel is weighted in such a way as to counterbalance the weight of the arc ; the latter, therefore, travels smoothly round the whole circle, and remains at any point at which it may be placed. By means of the set-screw above it it can, if desired, be fixed at any point of the circle.

On the hinder surface of the handwheel—the surface seen in the figure—is the pricker. This is a pointed steel pencil, which slides in a brass plate in the meridian corresponding to the quadrant of the perimeter. The brass plate is graduated from 0° to 90° , like the quadrant. The position of the pencil is altered by the finger and thumb of the operator acting on buttons near to the edge of the handwheel.

Behind the handwheel is the chartholder, hinged at the bottom, and kept in position by a spring catch ; when the catch is raised by the finger the chartholder falls backward, so that the chart may be inspected or a fresh one introduced. The chart is thus held very near to the point of the pricker, and is easily brought into contact with it by the thumb of the operator. When the pricker is drawn out to 90° on the scale, it travels over the outermost circle on the chart ; when it is pushed down to 0° , it stands in the axis of the instrument, and corresponds to the centre of the chart.

A loose circular black screen, like that employed in McHardy's instrument, fits on to the anterior end of the axis, so as to provide, when necessary, for special examination by hand of the central area of the field. It is shown in the figure lying upon the stand.

In proceeding to use the perimeter, the patient is placed as before indicated, and the operator stands facing him, with his right hand on the handwheel. The quadrant is brought into the upper vertical position, as shown in the figure, and the test-object and pricker are both placed at 90° on their respective scales. A complete revolution is then given to the quadrant, and the points

at which the test-object *appears* and *disappears* are carefully found and pricked off upon the chart. The quadrant being then again in the upper vertical position, the test-object and pricker are each moved down one notch by hand, viz., to 80° , and a second revolution is made as before. This is repeated until the test-object is found to remain in view throughout the whole of the circle; the observation is then complete, and it remains only to connect the dots pricked upon the chart by lines.

The way in which the dots have to be connected requires some consideration. It is obviously incorrect to join them simply by straight lines, for just where the field is roundest the dots made in mapping it are fewest. The dots lie of course, in all cases, on the circles of the chart, and each one indicates a point at which the test-object, when travelling round that particular circle, passed into the visual field or passed out of it; hence at each dot the boundary-line which we draw must *cut the circle*, and between each dot and the next it must lie *between the circles*. This rule being borne in mind, the filling in of the chart is done easily and rapidly. It is well to draw the connecting lines just up to the dots but not to carry them through them, so that the latter may remain clearly visible.

Sufficiently accurate results for all ordinary purposes are obtained by sweeping the field in circles 10° apart, i.e., at 90° , 80° , 70° , and so on; if more precise mapping is desired, the test-object and pricker may be placed at each intermediate 5° as well. Two sets of charts are provided marked A and B respectively. The A charts correspond to the entire field, and are divided by circles 10° apart, from 0° to 90° : the limits of the average normal field are indicated upon them by a dotted line. The B charts are for the mapping of the central part of the field on a larger scale, and are divided accordingly by circles 5° apart, from 0° to 45° , and for use in conjunction with these there is a second scale by the side of

the pricker divided in like manner from 0° to 45° . Both charts are divided by meridians also, and are printed for *right eye* and *left eye* respectively.

The results obtained by the circular method in the way described may be supplemented or checked by examination in the ordinary way on the quadrant or on the screen.

In connection with the idea of mapping the field by circles, a doubt suggested itself at first as to whether the patient would find it more difficult to follow the motion of the test-object and to determine the points of its appearance and disappearance than when it enters the field in the ordinary centripetal manner. This proves not to be the case; the only case in which hesitation occurs is where the boundary of the field coincides for some distance with the circle or joins it at an extremely acute angle, and here manifestly the exact position of the dot is unimportant. On the other hand, where the boundary of the field crosses the circle more nearly at right-angles, as in cases of hemiopia and sector-like defects, the determination is extremely sharp, and just in these cases the ordinary method involves more trouble. The manipulation of the instrument requires only one hand and is very easy, for the hand only leaves the handwheel for a moment, on the completion of each revolution, to move the test-object a notch down the arc, and after a little practice the mapping of the field is done very rapidly.

Messrs. Parkes and Son, of St. Mary's Square, Birmingham, have given great pains to the perfecting of the original instrument made for me by them, and are now prepared to supply others. They estimate the price of future instruments at about four guineas.

C. S. BULL, (New York). Lesions of the Orbital Walls and Contents due to Syphilis. *New York Med. Journ.* August 1882, p. 113.

This paper forms a sequel to a previous essay by the same author on syphilitic diseases of the lachrymal apparatus (*vide* O. R. June, p. 220).

Disease of the bony walls of the orbit is not a very common manifestation of constitutional syphilis, though it is by no means rare. The changes are of four chief kinds:—1. Periostitis or osteoperiostitis, with or without subperiosteal abscess; 2. gummy tumour or syphiloma of the periosteum; 3. periostosis, hyperostosis, or exostosis; 4. caries and necrosis. These lesions belong mostly to the late stages of syphilis, but there are probably two forms of syphilitic periosteal disease which are to be distinguished from each other by the intensity of the process and the period of the constitutional infection at which they occur; the earlier affections are the less severe, the later are accompanied not only by subperiosteal and osseous gummata, but also by dense osteitis and necrosis.

Simple syphilitic periostitis or osteoperiostitis occurring early is limited to the periosteum and superficial layers of the bone. Between the periosteum and the bone are accumulated a large number of round cells analogous to the cells of the embryonic medulla; the deeper layers of the periosteum are inflamed and contain cells between the fibrous bundles; the neighbouring connective tissue generally shows some inflammatory œdema which accounts for the swelling observable between the skin and the bone. When the bone disease has lasted a long time, the round cells nearest to the surface of the bone beneath the periosteum act like osteoblasts during the period of ossification, in other words simple osteo-periostitis consists, histologically, in a return of the cells between the bone and periosteum to the embryonic state. Various new osseous products, such as osteophytes, exostoses, enostoses, and eburnation, are accidents common to all forms of syphilitic osteo-periostitis, the new bony lamellæ developing under the periosteum as exostoses, and in the bone itself as a parenchymatous hyperostosis and eburnation.

Gummata of bone are only an intense and limited osteo-periostitis with destruction of the osseous lamellæ by a rarifying

osteitis. Though common in the other cranial bones they are rare in the bones of the orbit. When a gumma of the orbital periosteum has formed a cavity in the bone, and the inflammatory process has come to an end, the new material becomes caseous and atrophies, the peripheral osteo-periostitis heals and there may be a partial reparation of the bone. If, however, the bone is completely perforated, the defect is not filled up by new bone tissue but by a fibrous cicatrix.

The symptoms of orbital periostitis are pain, swelling, and protrusion of the eyeball. Two forms of inflammation, acute and chronic are to be distinguished. The acute form is a precocious lesion and the symptoms are apt to be severe. There is great pain in and around the eye, especially along the superior orbital margin which is excessively sensitive to pressure, and the constitutional signs of inflammation may be very severe. The eyelids are red and swollen, the ocular conjunctiva is injected and sometimes chemotic, especially if the orbital cellular tissue is involved; the eyeball is protruded more or less according to whether the periostitis is deep in the orbit or near its margin; there may be loss of vision through pressure upon the optic nerve, or even loss of the eye through strangulation of its blood vessels in the orbit; optic neuritis may arise through extension of the inflammation to the nerve sheath; suppuration is much more likely to occur when the inflammation attacks the orbital cellular tissue than when it is limited to the periosteum.

The chronic form is more insidious, there being no pronounced symptoms until late in the course of the disease, unless the inflammation is located near to the orbital margin, when the presence of a tumour, painful, tender, and indistinctly fluctuating, aids the diagnosis; it often leads to the formation of a subperiosteal abscess which strips up the periosteum and ends in a caries or necrosis of the bone. Such an abscess tends to point usually outwards through the conjunctiva or lid, sometimes, when more extensive, into the nose, the frontal sinus, the maxillary sinus, or, gravest of all, into the cavity of the skull. If it perforate through the conjunctiva the site of the bone lesion is almost certainly deep in the orbit, for when the orbital margin is involved the opening forms in front of the tarso-orbital fascia through the lid.

Extension of the inflammation to the meninges of the brain appears to occur very rarely through the optic foramen ; it is much more likely to happen when the roof of the orbit is the seat of the lesion, for here the bone is quite thin, and a carious process may soon penetrate it.

If properly treated in the beginning, syphilitic-periostitis of the orbit generally ends in resolution without permanent damage to the bone. Caries and necrosis when they occur are most frequent at the orbital margin or at the inner corner of the roof ; though usually the sequel of a periostitis these lesions may begin as a true osteitis and involve the periosteum only secondarily, and these cases are the worst of all, the disease spreading from one bone to another, and causing prolonged suppuration and extensive exfoliation and deformity.

Circumscribed periostoses, to which the term node may be applied as well in the orbit as in other regions, are late manifestations, the result of long-continued plastic inflammation. They are generally sensitive to pressure and painful at certain periods of the day. It is probable that they occur deep in the orbit oftener than has been supposed, and are not unfrequently the cause of paresis and paralysis of the external muscles of the eye. A node at the apex of the orbit, involving the nerves, would lead to atrophy by pressure, and the paralysis might then be permanent in spite of the subsequent removal of the node, and this is perhaps the reason that ocular paralyses in syphilitic patients are often incurable even by well directed treatment. Periostosis deep in the orbit is likely to produce protrusion of the eyeball ; there are no signs of acute inflammation, no constant pain, and no tenderness at the orbital margin, but pain is evoked by pressing the eye directly backwards.

Hyperostosis, which differs from periostosis in being primarily a disease of the bone itself, is the rarest of all the diseases of the orbital bones ; the thickening process may go on for an indefinite time after all sign of inflammation has ceased, and may lead to protrusion of the eye with singular changes in the shape of the orbital cavity. Such hyperplasia is more often due to some other cause than syphilis ; it is of ivory hardness and never yields to constitutional treatment. Operation is only justifiable when the function of the eye is interfered with, and is best attempted by mechanical drills such as dentists use.

Exostoses differ from the swelling and projection of periostosis in size and shape, and somewhat in location. They are most frequent on the inner wall of the orbit and near its margin. They have a narrow base and project into the orbital cavity. The syphilitic do not differ in their growth and appearance from those due to other causes; they are always covered by periosteum and frequently do not involve the subjacent bone at all. They occur with and without signs of long continued chronic periostitis, and are a late manifestation of syphilis; they are usually but not always of slow growth. When accessible to digital examination, they are recognised as hard, smooth elevations with circumscribed base, usually not painful on pressure, but causing pain by interference with the eyeball or the nerves in the orbit. Exostoses are less readily influenced by constitutional treatment than periostitis, but they have been known to disappear from the orbit under the use of mercury and iodide of potassium; constitutional treatment should always be tried before operation is resorted to. When the base is narrow a strong bone forceps generally suffices for the removal, sometimes the chisel or gouge required.

Bull gives illustrative cases from his own practice of periostitis and cellulitis of the orbit leading to caries; of hyperostosis affecting the adjoining portions of the frontal and malar bones; and of exostoses springing from the inner wall, the floor, and the roof of the orbit, some of which disappeared under the use of iodide of potassium in large doses; in all these cases the primary syphilitic affection had occurred many years before.

J. TAMMAMCHEF (Constantinople). A Contribution to the Pathology and Therapy of Diseases of the Tarsal Margins, especially Trichiasis and Distichiasis. *Central. für prakt. Augenheilk.*, September, 1882, p. 263.

The author urges that the ordinary modes of treating trichiasis and distichiasis are unsatisfactory, because they do not attack the origin, but merely palliate the results of the disease. He bases his own method upon a study of the pathological process from its outset.

The meibomian follicles secrete an oily fluid which, by lubricating the edges of the lids, prevents the tears from flowing over them, prevents their adhesion, and facilitates their gliding over the eye. Disturbance of this function has important effects on the tarsal margins and roots of the eyelashes. An inflammatory process in the meibomian follicles is the pathological cause of the loss of elasticity and the bending and curving of the lashes which constitute trichiasis, and of the alteration in the direction of their growth, producing the appearance of a double row, which is known as distichiasis.

The function of the follicles is influenced by various forms of external irritation such as affect the conjunctiva, and inflammation of the latter, whether simple or trachomatous, may affect them by continuity. Their secretion is thereby increased and altered in character, and acts as an irritant on the edges of the lids and the hair-bulbs. The nutrition of the hairs suffers, and bent, imperfect hairs are formed, causing a temporary trichiasis, such as often occurs with superficial inflammations of the lid-margins. Later in the course of the disease minute abscesses form along the edge of the lid, corresponding to the bulbs of the hairs and pierced by the hairs themselves, and these, when they discharge their contents, leave ulcers. In many cases the whole process is attributable to occlusion of the gland-ducts by retained and altered secretion; on pressure between the fingers, or between the hornplate and the finger, there escapes from the ducts a gelatinous milky or yellowish substance which sometimes contains amyloid and cretaceous particles. The inflammation which is connected with these changes in the glands may run an acute, a sub-acute, or a chronic course.

The tissue changes in the tarsal margin are firstly a serous exudation into the connective tissue, with swelling, then an aggregation of cells between the fibres, especially around the vessels, and an increase of vascularity. In the advanced stage of the disease the connective tissue fibres become thickened, compact, and almost tendinous in character, and by contraction compress and annihilate the blood vessels more and more until ultimately the whole lid-margin may undergo a fatty degeneration, with calcareous and amyloid formations in the tissue.

Microscopic examination of the cilia shows a swollen condition of the bulbs, and a bending, splitting, and wasting of the hairs; they are irregularly pigmented, their central medulla is partly or entirely absent, and ultimately they become completely atrophied.

The results of the inflammation—the trichiasis and distichiasis—cannot subside until the inflammation itself is permanently subdued. To effect this, the author operates as follows:—The horn spatula being placed between the lid and the globe, an incision is made along the border of the lid so as to split it into two layers, the outer consisting of the skin and loose connective tissue, the hair bulbs, and lashes, and some muscular tissue; the inner, of the tarsus with its glands, and the palpebral conjunctiva. The incision should be 4 to 6 mm. deep, and sometimes deeper still. The arrest of hæmorrhage soon occurs spontaneously, and may be promoted by cold-water compresses. The raw surface is then touched freely with a pointed pencil of nitrate of silver. Twenty-four hours later there is a dusky redness and more or less swelling of the lid to a distance of half a centimeter from its edge, and the wound is covered with a thick layer of pus. It is cleansed, disinfected, and bandaged. The patient's general condition is generally not disturbed; occasionally it is slightly febrile. At the end of forty-eight hours the slough separates, and on the third day the wound is clean and granulating. The patients always remain out-door cases during the treatment. If the incision was incorrect in the first instance, or the slough of insufficient size, the cauterisation should be repeated; but such cases are rare.

For three years past the author has treated all cases of trichiasis and distichiasis in this way, and with excellent results; patients are freed from their discomfort in a week, and after two or three years no recurrences have been seen. He claims for it the advantages that the operation is easy to perform and short, that the whole treatment is short, that febrile symptoms very rarely follow the operation, that the integrity of the skin of the lid is not impaired, and that the procedure has an exact pathological basis.

M. BLIX (Upsala). A Self-registering Perimeter.
Centralblatt für prakt. Augenheilk., August 1882, p. 251.

The arrangement of this perimeter is novel, and somewhat difficult to explain without the aid of the figure given in the original article. Instead of standing on a table in front of the patient like most others, it is fixed to the back of the chair in which he sits; steadiness of the head is attained by a pad at the occiput instead of by a chin-rest or other point of support in front; the test object is carried, not by a quadrant fixed before the face, but by a bent arm coming from behind, and the fixation-object is suspended before the eye in like manner.

Screwed to the chair-back is a socket in which the upright bar of the perimeter is adjustable to the necessary height so as to bring the axis of the instrument and the test-object on a level with the patient's eye. The axis is a pivot fixed in the upper end of this upright bar; its direction, if produced forwards, would coincide with the visual axis of the eye under examination. On this pivot is a second bar which passes upwards and then bends forwards at a right angle above the patient's head as far as the point which lies vertically above the eye; here it is jointed with a light arm of wire, which, passing forwards and then bending downwards at a right angle suspends the test object in the air exactly in front of the eye, and at a distance from it which can be varied by varying the length of the arm. When this arm moves on its centre, which lies vertically over the eye, the test-object describes a semicircle in a horizontal plane round the eye as a centre. By moving the upright bent bar which carries the arm, and placing it in other positions than the vertical, the test-object can be made to describe, in like manner, other semicircles oblique and vertical around the eye as a centre.

From the joint round which the arm moves a cord passes backwards and downwards over a pulley towards the axis of the instrument and there actuates a movable pencil, giving it a movement corresponding to that of the test-object, but on a smaller scale. The chart-holder, which consists of a round disc of thin wood supported by a strip of flexible steel, stands facing the point of the pencil behind the patient's head; a

little pressure brings it into contact with the pencil as required.

The pad which supports the back of the patient's head is provided with a screw, by means of which it can be advanced or retired so as to bring the eye in all cases exactly under the joint of the instrument.

The fixation point may be provided by any suitable object placed in the required position in front of the patient. Where the patient is intelligent, and has sufficient visual acuity, fixation is obtained by causing him to view the image of his own eye in a small plane mirror suspended from the bar of the instrument, and accurately adjusted at right angles to the visual axis ; so long as the eye sees its own image in this mirror and the occiput remains in contact with the pad, an unaltered position of the eye is ensured.

The cost of the instrument is 50 Swedish crowns (= about 56 shillings). The name of the maker is not stated.

Z. GALEZOWSKI (Paris). *New Treatment of the Lachrymal Passages by a Dilator.* *Recueil d'Ophth.*, August, 1882, p. 449.

Galezowski has for six months practised a mode of rapid and forcible dilatation of the nasal duct without scarification of its walls, which he believes will replace all other modes of enlarging the duct. The instrument employed is a dilator, the blades of which, when closed, form a smooth, round probe, equal in thickness to Bowman's No. 4. When the blades are together the handles are separate. The closed blades are passed into the duct like an ordinary probe. The handles are then pressed together, and the blades in separating produce an effect equal to that of Couper's largest probe ; at the same moment the instrument is withdrawn.

The pain, though sharp, is of short duration, and hardly a drop of blood is lost. Ordinarily there is no inflammatory reaction. If the dilatation is practised on inflamed and suppurating tissues, poultices are applied for a few hours afterwards.

A fine probe, No. 3 or 4, is passed on the third or fourth day, to determine whether the duct is free from obstruction,

and this is followed by a No. 10 or 12, which is usually introduced without difficulty and with little pain.

By this method the author has obtained complete cures after other measures, perseveringly employed, have failed. Illustrative cases are cited. The instrument, of which a figure is given, is made by Collin, of Paris.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

THURSDAY, OCTOBER 12TH, 1882.

WILLIAM BOWMAN, F.R.S., President, in the Chair.

Reported by DAWSON WILLIAMS, M.D.

The President said that he had great pleasure in announcing that the second volume of the Society's Transactions was ready for delivery. Great praise was due to the secretaries for the punctuality with which the volume appeared. The volume was somewhat larger than the first, and would, he thought, be found to be of equal value.

Chronic Diphtheritic Ophthalmia.—Mr. Anderson Critchett and Mr. Juler exhibited a living case of a rare conjunctival affection, which they considered to be chronic membranous, or so-called "diphtheritic" conjunctivitis, occurring in a girl aged 18. Ten months ago she had been under the care of Mr. Bishop and Mr. Whitcombe, at the lock hospital, for local suppurating (soft) sores about the vulva and anus. There were no symptoms of constitutional syphilis. No mercury was given. She was discharged to the lock asylum in six weeks, cured. Five months ago she had an attack of inflammation of the conjunctiva in both eyes, which was treated with alum and zinc lotions, and was nearly cured in two weeks, when a white patch appeared in the lower part of the ocular conjunctiva of the left eye. There was no suppuration; the patch was white, opaque, and non-vascular, whilst the surrounding conjunctiva was injected. Two months ago she was brought to St. Mary's Hospital. Despite local remedies, such as iodoform, quinine

lotions, etc., combined with mercury, internally, the growth has gradually extended, and now occupies the whole palpebral aperture, where it appears as a dirty white shreddy mass, having a semi-indurated vascular base when the lids are separated by the fingers. Ten days ago a similar patch appeared in the right eye, and is steadily increasing in extent. It now appears as a transverse band, 1·5 cm. long, 0·5 cm. wide, situated half-way between the cornea and lower cul-de-sac. It is opaque, white, tough, and non-suppurating. It cannot be peeled off. The surrounding conjunctiva is injected. There is photophobia. Vision normal.

Mr. Power had never seen a quite similar case, but he had met with one which resembled it. The patient was a man affected with syphilis. A horny mass, very like a rupial scab, projected from the lower cul-de-sac; he excised the mass, and the man recovered.

Mr. Nettleship considered the case to be one of chronic diphtheritic ophthalmia; he had never seen so marked a case as this one, but had seen three of a similar nature. In one case, that of a woman in whom the disease had existed for six weeks, recovery followed the use of lapis divinus. In some of the few cases which had been recorded the membrane had grown so much as to form a polypoid projection between the eyelids.

Leucocythæmia.—Dr. Samuel West exhibited a living case of leucocythæmia, showing tortuosity of the retinal vessels in a marked degree.

Case of Chronic Tubercle of the Choroid and Brain—Dr. Stephen Mackenzie.—The patient was a girl, aged 4. There was no tubercular history. She had never been well since hooping-cough, eighteen months before her death, suffering from frontal headache, feverish attacks, diarrhoea, and occasional vomiting, and lost appetite and flesh. Following this was white swelling of right knee. She then rapidly lost her sight, whilst the other symptoms continued. When first observed she was flushed and feverish: there were no abnormal signs in chest or abdomen. She was quite blind. Ophthalmoscopic examination showed double papillitis. In the left eye, a patch of choroidal disease larger than the disc, to outer side of it. It was opaque

and yellow in centre, with a zone of black pigment, and an outer margin of pigment. A smaller circular patch was below the disc, over which coursed retinal vessels. One small patch existed in the right eye. The diagnosis was chronic tubercle of choroid and brain. Later, acute cerebral symptoms set in, with high temperature, and terminated in death. These were thought to indicate acute tubercular meningitis. The head only was allowed to be examined. Necropsy showed acute tubercular meningitis, with several caseous tumours in various parts of the brain. Microscopic examination of these showed aggregated tubercle with giant cells. The choroid was thickened owing to the pressure of tubercles with giant cells in their interior. The retina was swollen, and the optic nerve and its sheath showed marked signs of inflammation. The brain tumours and tubercular choroid were examined for bacilli by the processes of Ehrlich and Heneage Gibbes, with negative results. It was remarked that the detection of the tubercular disease in the choroid was of some value in aiding the diagnosis as to the nature of a coexisting encephalic lesion, but unfortunately, owing to the character of this disease, the knowledge was of little service in treatment. That some intra-cranial disease was present was indicated by the double papillitis, headache, occasional vomiting, drowsiness, etc., and that it was tubercular by the age of the patient, the feverish attacks, pallor and wasting, and white swelling. Allusion was made to Deutschmann's inoculation experiments in rabbits, in which it was shown that the tuberculosis induced in the membranes and brain were followed by double papillitis, and tubercle of the vitreous and choroid, and that the process was traced in post-mortem examinations to metastatic infection along the optic nerve sheaths. Deutschmann has also recorded a case of tubercular meningitis in a child, in which an appearance of tubercle in the optic nerve sheath was present. The present case lent no support to this supposed connexion between the tuberculosis of brain and eye.

Tuberculous Mass growing from near the Optic Disc—
Dr. Brailey.—In this case, a tuberculous mass, apparently primary, sprang from the optic disc, and immediately surrounding choroid, simulating in some of its clinical features a glioma. The globe was enlarged, and its tension increased.

The cornea was increased in size, and the anterior chamber was deepened. The retina was detached, except from the ora serrata, and it was this membrane with its vessels that was visible during life through the clear lens. There were many point-like posterior synechiæ. Though the mass, which presented all the histological evidences of tubercle, replaced the tissue of the papilla, it did not extend backward beyond the lamina cribrosa, nor laterally for any distance in the choroid. As there was no precise microscopical evidence that it had originated in the retina or tissue of the papilla, the author presumed that a choroidal origin was the more likely in view of the number of cases of tuberculous choroidal disease that had been described. The patient, a boy aged 2, the second child, was stout and well, but had been within a few months very thin and weak. The eldest child was 4 years of age. Before this there had been a miscarriage of four months. The mother died of consumption six months before the excision. The father was said to be very healthy. The after-history of the patient could not be traced.

General Miliary Tuberculosis, Tubercle in Choroid; no Meningitis
—Dr. Francis Warner.—The patient was a girl, aged 9 years. She presented continued fever and emaciation; respirations were increased in frequency out of proportion to the pulse and temperature; this averaged 102° to 103° . There were crepitations over the lungs, but no signs of pneumonia. The optic discs appeared healthy, but in either eye there were three or four light-coloured, raised, cloudy spots, at some points turning aside a retinal vessel. The child died eight days after these tubercles were first seen. At the necropsy the lungs were found crowded with tubercles, others were found in the liver and spleen and kidneys. There was no meningitis. The back of both eyeballs being removed, tubercles were found in the choroids. The case was put forward as an illustration of the association of tubercles in the choroids with general miliary tuberculosis, without meningitis.

Dr. E. Baxter said that it was a matter of great importance to ascertain with what other morbid conditions tubercle of the choroid is most often associated. During the last twelve years he had examined the eyes of children suffering from tubercular

meningitis, but had never met with tubercle in the choroid ; he had generally seen papillitis. He had only seen choroidal tubercle in two cases, and in both there was no tubercle of brain or meninges, but there was miliary tuberculosis of the lungs.

Dr. Coupland had seen only a few cases of tubercle of the choroid, but in all of these there had been tuberculosis, not only of the meninges, but also of universal distribution. Cohnheim had found tubercular disease of the choroid to be a frequent accompaniment of chronic phthisis.

Dr. Sharkey said that in three and a-half years during which he was resident at St. Thomas's Hospital, and examined eyes extensively, he had only found tubercle of the choroid once ante-mortem in meningeal cases.

Dr. Barlow had seen about twenty cases of choroidal tubercle post-mortem, and in a large proportion of these cases there was meningitis. He thought it most necessary always to have post-mortem evidence of choroidal tubercle, and not to rely merely on the ophthalmoscopic appearances. In some cases of meningitis, in examining the choroid after death, he had noticed an appearance which he believed to be due to very small tubercles, a kind of granular condition or "tubercular dust," as it had been called. The case brought forward by Dr. Mackenzie was an instance of a chronic type. Some years ago he had had a case under his care, where the eye was removed for a caseous mass in it, and where, after death, which occurred some time afterwards, caseous tubercle of the brain was found.

Dr. Sansome thought the chief advantage to be derived from the diagnosis of tubercle of the choroid was the assistance it gave in the prognosis of doubtful cases : in one case of ordinary phthisis he had been able to give a correct prognosis, though there was at the time no evidence of intracranial mischief. But he thought we were likely to be misled by seeing tubercle of the choroid : in one such case he had given an unfavourable prognosis, which was falsified ; he had therefore ceased to believe that choroidal tubercle was a certain sign of meningitis, and to be depended on in prognosis.

Mr. Hulke thought that this anxiety as to prognosis was unnecessary. In his experience, optic papillitis was generally

seen in meningitis, while tubercle of the choroid was a part of a general tuberculosis, and seldom seen except in that connection.

Mr. Brudenell Carter considered that in advanced cases of meningitis papillitis was generally present, and not choroidal tubercle, which, however, might be found in general tuberculosis. He thought that appearances were often encountered in the eyes of healthy people which might easily be mistaken for tubercle of the choroid, and that in giving a prognosis reliance ought chiefly to be placed on the general symptoms.

The President said that this discussion was an instance of the usefulness of the Society, which brought to a common focus the experience of physicians and ophthalmic surgeons.

On certain Cases of Destructive Ophthalmitis in Children.—Mr. Nettleship drew attention to those cases of deep-seated disease which simulate glioma of the retina in their clinical features. He believed that there were two principal types of morbid change in this class of cases:—(1) Irido-choroiditis, either acute and almost purulent, or chronic, the result of either form being inflammatory opacity in the vitreous with subsequent detachment of the retina, and backward displacement of the ciliary processes by the shrinking of the inflammatory material; hæmorrhage between choroid and retina might occur; (2) inflammation and condensation of the vitreous, especially in its outer layers, and in some cases also in its antero-posterior axis, probably the result of a chronic severe retinitis, no detachment of retina occurring. Iritis occurred in nearly all cases of "pseudo-glioma," and there was often severe inflammation of the eye in the early period of the case. It was particularly as to the causes of these eye changes that information was wanted. It was not sufficiently known that the conditions called pseudo-glioma, whether following severe inflammation of the eye or not, often came on during or soon after some severe illness, whilst in a considerable number the children were syphilitic. Measles, hooping-cough, varicella, and perhaps pyæmia and sporadic recoverable meningitis appeared from the cases, published and unpublished, collected by the author, to be the commonest antecedents of these eye changes. He asked especially for evidence as to the nature of the connexion between the ocular and constitutional conditions.

Dr. Barlow had seen five cases of this disease, and in three of these he had had a suspicion of syphilis. He, however, thought it most unscientific to assume that syphilis was the cause of any morbid state which might occur in a person merely because the patient himself, or his parents, had had syphilis. In the cases under discussion he did not imagine there was any causal relation to syphilis. On the whole, he thought the hypothesis of a pyæmic origin the most tenable, but he had never been able to obtain post-mortem evidence. In the case of one man who died of ulcerative endocarditis, he had seen extensive hæmorrhages and opacities of the vitreous, and he thought there were grounds for believing that some cases might so begin. He could confirm the statement that a history of an earlier acute illness was generally given; that this illness appeared to cease; and that afterwards, when the child was brought to the physician or surgeon, a more or less damaged eye was seen.

Dr. Brailey thought that embolism could not be the active agent in many cases; for in the few cases of embolism he had seen the appearances were very different. He thought the cases were instances of suppuration of the vitreous. Many years ago Mr. Hulke had commented on the frequency with which suppuration of the vitreous occurred in weakly children.

Mr. Waren Tay had seen a case of double panophthalmitis with cerebro-spinal meningitis, and he believed the combination was not rare, and that it had been observed in the epidemic at Dublin.

Dr. Stephen Mackenzie, though he had seen a good many cases of sporadic cerebro-spinal meningitis (which was to be distinguished from epidemic cerebro-spinal meningitis), had never seen one case of panophthalmitis.

Dr. Fitzgerald only remembered to have seen one case of panophthalmitis in the epidemic at Dublin. In endocarditis, in puerperal cases, and after amputation, he had seen some cases. Dr. Stokes, he believed, had described it under the name of "sudden dissolution of the eye," as occurring in cases of heart-disease.

Mr. Adams thought that the subject raised by Mr. Nettleship dealt with cases where, with clear media, the yellow reflex supposed to be always due to glioma was observed. It was

most important to know what the prognosis was in such a case. Was it necessary to excise? He thought probably not, and in the case of a young lad at present under his care he had resolved to watch the progress of the disease.

RECENT LITERATURE.

A. RETINA. OPTIC NERVE. CENTRES.

BENSON, A. Sudden amaurosis resulting from a wound of lower eyelid.

Dub. Med. Jour., October, 1882, p. 330.

BENSON, A. H. On a case of embolism of the central artery of the retina; modified by the presence of a cilio-retinal artery.

Royal Lond. Ophth. Hospital Reports, August, 1882, p. 336.

BERT. Observation sur le siège du scotôme scintillant.

Compt. Rend. Hebd. des Séanc. de la Soc. de Biol., Nr. 29.

BRUNNER. Ueber Chininamaurose. Inaug.-Diss.

Zürich, 1882.

BULLER. Plötzliche und vollständige Erblindung nach grossen Chinindosen.

Med. Central-Zeitung, LI., p. 66.

CAPRON, F. P. A case of blindness after fracture of the base of the skull.

Archives of Ophthalmology, September, 1882, p. 335.

CHARCOT. Migraine ophthalmique se manifestant à la période initiale de la paralysie générale.

Progrès Méd., 1882. Nr. 30.

CHARPENTIER. Nouvelles recherches sur la sensibilité de la rétine.

Arch. d'Ophth. II., 3, p. 234.

DEUTSCHMANN. Ein experimenteller Beitrag zur Pathogenese der sympathischen Augenentzündung.

Von Graef's Arch., XXVIII., 2, p. 291.

DICKINSON, W. H. Meningitis; long-continued and extreme retraction of the head and flexion of the limbs, double optic neuritis and loss of vision, bed-sores, recovery with good vision and powers of movement.

Birt. Med. Jour., October, 1882, p. 738.

- FUCHS. Aneurysma arterio-venosum retinae.
Arch. f. Augenh., XI., p. 440.
- GAUSER. Ueber die periphere und centrale Anordnung der Sehnervenfaseru und über das corpus bigeminum anterius.
Arch. f. Psych. and Nerv., XIII., p. 341.
- HELFREICH. Ueber Arterienpuls der Netzhaut.
Festschrift zur Feier des 300 jährigen Bestehens der Universität zu Würzburg.
- HIGGENS. Trois cas d'atrophie simple des nerfs optiques observés sur les enfants d'une même famille.
Rev. d'Oc. du Sud-ouest, III., 7, p. 154.
- HULKE, J. W. On a case of spurious neuroma of the optic nerve.
Royal Lond. Ophth. Hospital Reports, August, 1888, p. 293.
- KRAUSE. Anatomische Untersuchung über das Verhalten der Ciliarnerven nach der Neurotomia opticociliaris.
Berl. Klin. Woch., Nr. 30 and 31.
- KRAUSE, F. On the anatomical alterations after optico-ciliary neurotomy.
Archives of Ophthalmology, September, 1882, p. 309.
- KRIES, VON. Die Gesichtsempfindungen und ihre Analyse.
Leipzig, 1882.
- LAWSON, G. On a case of tumour springing from the optic nerve.
Royal Lond. Ophth. Hospital Reports, August, 1882, p. 296.
- LAWSON, G. On a fatal case of tumour of the brain, with optic neuritis.
Royal Lond. Ophth. Hospital Reports, August, 1882, p. 311.
- LOEBELL. Ein Fall von centralem Scotom mit ophthalmoscopisch nachweisbarer Veränderung der Macula lutea.
Inaug.-Diss.
Greifswald, 1882.
- MARTIN. Du décollement de la rétine.
Journ. de Méd., March, Nr. 10.
- MARCHAND. Beitrag zur Kenntniss der homonymen bilateralen Hemianopie und der Faserkreuzung im Chiasma opticum.
Von Graefe's Arch., XXVIII., 2, p. 63.
- MAYERHAUSEN. Einiges über den Maxwell'schen Fleck.
Von Graefe's Arch., XXVIII., 2, p. 283.

PARINAUD. Du contraste chromatique. Sa raison physiologique. Son siège cérébral.
Compt. Rend. Hebd. des Séances de la Soc. de Biol.
 Nr. 28.

PONCET. Du gliome de la rétine.
Arch. d'Ophth., II., 3, p. 211.

REICH. An interesting and rare case of hemianopia (Russian).

SCHWEIGGER. Zur Embolie der Arteria centralis retinae.
Arch. f. Augenh., XI., p. 444.

SOURY. Nouvelles théories du sens des couleurs. (Hering. Preyer. Charpentier).
Revue scientifique, Nr. 5, July 29th.

TWEEDY, J. On the meaning of the words nyctalopia and hemeralopia.
Royal Lond. Ophth. Hospital Reports, August, 1882,
p. 413.

VETSCH. Ueber Glioma retinae.
Arch. f. Augenh., XI., p. 413.

WEYDE, VAN DER. Die Systeme der Farbenblinden.
Von Graefe's Arch., XXVIII., 2, p. 1.

B. UVEAL TRACT. VITREOUS AND AQUEOUS. LENS.

ALEXANDER. Linksseitige Erblindung durch Thrombophlebitis als Folge einer rechtsseitigen Glaskörpereiterung.
Deutsche med. Woch., 1882, Nr. 34.

BERGER. Beiträge zur Anatomie der Zonula Zinnii.
Von Graefe's Arch., XXVIII., 2, p. 28.

BRAILEY, W. A. On the size and position of the crystalline lens in glaucoma.
Royal Lond. Ophth. Hospital Reports, August, 1882,
p. 372.

BRAILEY, W. A. Curator's pathological report on new formations in or upon the choroid.
Royal Lond. Ophth. Hospital Reports, August, 1882,
p. 390.

BRAILEY, W. A., and GAMA LOBO. On choroidal new formations.
Royal Lond. Ophth. Hospital Reports, August, 1882,
p. 405.

CHISOLM, J. J. Cataract extraction with iridectomy in an infant six months old.
Archives of Ophthalmology, September, 1882, p. 326.

- CLITCHETT, A. On a case of sympathetic ophthalmia occurring fifteen days after removal of the injured eye.
Royal Lond. Ophth. Hospital Reports, August, 1882, p. 322.
- FALCHI. Tuberculosi dell' occhio per inoculazione. (Ricerche sperimentali eseguite nel laboratorio del Prof. Bizzozero). Contribuzioni cliniche e anatomiche alla tuberculosi umana dell' occhio.
Archivo per le Scienze Mediche, VI., Nr. 11.
- FORSTER, R. On the maturity of cataract, its artificial ripening, corelysis, and extraction of the anterior capsule.
Archives of Ophthalmology, September, 1882, p. 344.
- FUCHS. Melanoma iridis.
Arch. f. Augenh., XI., p. 435.
- HAASE. Ein Fall von Cysticercus cellulosae im Glaskörper. Extraction desselben, Erhaltung des Auges und des vorhandenen Sehvermögens.
Arch. f. Augenh., XI., p. 396.
- HIGGENS, C. Lectures on ophthalmology.—Lecture VII.: Iritis and glaucoma.
Med. Times and Gaz., September, 1882, p. 371.
- LANDESBURG. Zehnjähriges Verweilen eines Eisensplitters im Humor aqueus.
Klin. Mon.-Bl., September, 1882, p. 320.
- LANDESBURG. Siebenjähriges Verweilen eines Zündhütchenfragments in der Iris.
Klin. Mon.-Bl., September, 1882, p. 323.
- LANDESBURG. Dreijähriges Verweilen eines Eisensplitters in der Iris.
Klin. Mon.-Bl., September, 1882, p. 324.
- MAKLAKOFF. La sphinctérectomie et le sphinctérectome.
Arch. d'Ophth., II., 3, p. 230.
- MAUTHNER. Secundärglaucom und Glaucom-Theorien.
Wiesbaden, 1882.
- MILLES, W. J. On sympathetic ophthalmitis following extraction of cataract.
Royal. Lond. Ophth. Hospital Reports, August, 1882, p. 325.
- MURALT, VON. Die Staarextractionen der ophthalmologischen Klinik in Zürich, 1870 bis 1880, Inaug.-Diss.
Zürich, 1881.

- PARINAUD. De l'exagération des réflexes pupillaires.
Compt. Rend. Hebd. des Séances de la Soc. de Biol.,
Nr. 28.
- ROBINSKI. Untersuchungen über die sogenannten Augen-
linsenfasern.
Arch. f. Augenh., XI., p. 447.
- ULRICH. Die anatomischen Veränderungen bei chronisch-
entzündlichen Zuständen der Iris.
Von Graefe's Arch., XXVIII., 2, p. 239.
- C. CORNEA. CONJUNCTIVA. SCLERA.**
- AGUILAR. Contribution à l'étude de la kératite interstitielle.
Recueil d'Ophth., August, 1882, p. 457.
- ARMAIGNAC. Étiologie et traitement de l'ophtalmie purulente
chez les nouveau-nés et les adultes (fin).
Revue d'Oc. du Sud-ouest, III., Nr. 7, p. 145.
- BADER, C. The treatment of gonorrheal ophthalmia.
Lancet, October, 1882, p. 618.
- BALLERTI. Du staphylome pellucide et de son traitement.
Thèse.
Progrès Méd. (11th of March), Nr. 10.
- BOWEN, W. S. Long-continued presence of a spiculum of
copper in the cornea without exciting apparent irritation.
Archives of Ophthalmology, September, 1882, p. 333.
- BURNETT. Circumcorneale Hypertrophie der Conjunctiva.
Frühjahrs catarrh (Saemisch), Conjunctivite printanière
(de Wecker), Spring catarrh of the conjunctiva, und
einige Eigenthümlichkeiten ihres Auftretens bei Negeru.
Arch. f. Augenh., XI., p. 391.
- DENISSENKO. Zur Frage der Ernährung der Cornea.
Klin. Mon.-Bl., September, 1882, p. 299.
- HEISRATH. Ueber die Behandlung der granulösen Bindehaut-
entzündung mit tiefen und ausgedehnten Excisionen.
Berl. Klin. Woch., Nr. 29 and 30.
- HIGGINS, C. On eight cases of conical cornea, treated by
elliptical excision.
Royal Lond. Ophth. Hospital Reports, August, 1882,
p. 316.
- HOENE. Beiträge zur Histologie der Hornhaut.
Med. Jahrb. d. k. k. Ges. d. Aerzte zu Wien, 1882,
p. 185.
- HOTZ. Schlimme Folgen einer Calomeleinstäubung ins Auge.
Arch. f. Augenh. XI., p. 400.

WECKER, DE. Die mittels Jequirityinfusion künstlich erzeugte Ophthalmia purulenta.

Klin. Mon.-Bl., September, 1882, p. 317.

ZELINKA. Die Nerven der Cornea der Knochenfische und ihre Endigung im Epithel.

Arch. f. micr. Anat., XXI., p. 202.

D. ACCOMMODATION. REFRACTION. MOTOR APPARATUS.

BENSON, A. H. On a case of voluntary nystagmus.

Royal Lond. Ophth. Hospital Reports, August, 1882, p. 343.

CHARNLEV, W. On Keratoscopy.

Royal Lond. Ophth. Hospital Reports, August, 1882, p. 344.

CHARPENTIER. Sur quelques usages du trou sténopéique.

Arch. d'Ophth., II., 3, p. 193.

CHISOLM, J. J. Congenital paralysis of the sixth and seventh pairs of cranial nerves in an adult.

Archives of Ophthalmology, September, 1882, p. 323.

HOGYES. Ueber die Wirkung einiger chemischer Stoffe auf die associirten Augenbewegungen. Untersucht von Kovacs und Kertesz.

Arch. f. experim. Pathol., XVI., 1 and 2.

ROSENSTEIN. Totale Augenmuskellähmungen cerebralen Ursprungs. Inaug.-Diss.

Breslau, 1882.

SCHNELLER. Beiträge zur Lehre vom Schielen.

Von Graefe's Arch., XXVIII., 2, p. 63.

TOMÉ. Historia del oftalmoscopio.

Oftalmologia practica, I., 5, p. 97.

VELARDI. Dell' astenopia accommodativa. (Continued).

Bollet. d'Ocul., VI., 12, p. 179.

E. EYELIDS. LACHRYMAL APPARATUS. ORBIT.

CORNWALL, H. G. A dermoid encysted tumor of the eyelid.

N. Y. Med. Record, September, 1882, p. 346.

CORNWALL, H. G. A compound dermoid cyst of the orbit.

Archives of Ophthalmology, September, 1882, p. 338.

ELOUI. Sur un cas d'angiome caverneux enkysté de l'orbite.

Étude clinique et anatomique.

Arch. d'Ophth., II., 3, p. 259.

- GALEZOWSKI. Nouvelle méthode du traitement des voies lachrymales au moyen d'un dilateur.
Recueil d'Ophth., August, 1882, p. 449.
- HUBER. Klinische Beiträge zur Lehre von den Orbitaltumoren.
Inaug.-Diss.
Zurich, 1882.
- LAWSON, G. On a case of hydatid tumour of orbit.
Royal Lond. Ophth. Hospital Reports, August, 1882.
p. 301.
- MAGAARD. Ueber das Secret und die Secretion der menschlichen Thränendrüse.
Virchow's Arch. LXXXIX., p. 258.
- PANAS. D'une modification apportée au procédé dit la transplantation du sol ciliaire.
Arch. d'Ophth., II., 3, p. 208.
- PANNIER. Etude sur l'occlusion des paupières chez l'embryon.
Thèse.
Progrès Méd., March 11th, 1882.
- RAEHLMANN. Ueber amyloide Degeneration des Augenlides.
Arch. f. Augenh. XI., p. 402.
- STREATFIELD, J. F. Syphilis affecting in rare cases the appendages of the eye; with remarks.
Brit. Med. Jour., September, 1882, p. 633.
- TWEEDY, J. On a case of ivory exostosis of the orbit.
Royal Lond. Ophth. Hospital Reports, August, 1882,
p. 303.

F. MISCELLANEOUS.

- ALBERTOTTI. Telemetria.
Torino, 1882.
- ALBERTOTTI. Graduazione dell' oftalmometro di Helmholtz.
Torino, 1882.
- BEHRING AND WICKERKIEWICZ. Ein Fall von metastasirendem Chlorosarkom.
Berl. Klin. Woch., Nr. 33, 1882.
- BERLIN. Zur Physiologie der Handschrift.
Von Graefe's Arch., XXVIII., 2, p. 259.
- BURCHARD. Ein Fall von einseitigem Anophthalmos. (Ges. d. Charité-Aerzte in Berlin, January 29th).
Berl. Klin. Woch., Nr. 30.
- CARRERAS-ARAGO. Del sarampion en sus diversas manifestaciones oculares primarias ó secundarias.
Oftalmologia practica, I., 5, p. 103.

- DORESTE. Sur une anomalie de l'oeil.
Compt. Rend. Hebd. de Séanc. de l'Acad., July 3rd, 1882.
- GENZMER. Untersuchungen über die Sinneswahrnehmungen des neugeborenen Menschen.
Halle, 1882.
- HORNER. Die Krankheiten des Auges im Kindesalter.
Gerhardt's Handbuch der Kinderkrankheiten, V.
- HORSTMANN. Farben und Schöpfung.
Deutsche med. Woch., Nr. 33.
- LANDMANN. Ueber die Wirkung aseptisch in das Auge eingedrungener Fremdkörper.
Von Graefe's Arch., XXVIII., 2, p. 153.
- LEBER. Notiz über die Wirkung metallischer Fremdkörper im Innern des Auges.
Von Graefe's Arch., XXVIII., 2, p. 237.
- LITTEN. Ueber Veränderungen des Augenhintergrundes bei Erkrankungen der Leber.
Zeitschr. f. Klin. Med., V., p. 55.
- LORZ. Die Farbenbezeichnungen bei Homer mit Berücksichtigung der Trage über Farbenblindheit.
Dritter Jahresber. des Gymnasiums. Arnau, 1882.
- MASINI. La resorcina nelle malattie degli occhi. Nota preventiva.
Bollettino d'Ocul., IV., 12, p. 177.
- MASELON. Examen fonctionnel de l'oeil comprenant la réfraction, le choix des lunettes, la perception des couleurs, le champ visuel et les mouvements des yeux, avec figures dans le texte et 14 planches en couleurs hors texte.
Paris, 1882.
- MILLES, W. J. House Surgeon's Notes. On iodoform, atropine ointment, spasmodic entropion of the lower lids, and iridotomy.
Royal Lond. Ophth. Hospital Reports, August, 1882, p. 386.
- MOOREN, Dr. Disturbances of vision and utcrine diseases.
Archives of Ophthalmology, September, 1882, p. 281.
- YVERT. De l'extraction des corps étrangers du Globe de l'oeil.
Recueil d'Ophth., August, 1882, p. 478.
- Report from section on ophthalmology.
Transact. of the Med. Chirurg. Faculty of the State of Maryland, eighty-fourth annual session, Baltimore.

MISCELLANEOUS NOTES AND CASES.

BY SIMEON SNELL,

OPHTHALMIC SURGEON TO THE SHEFFIELD GENERAL INFIRMARY,
AND TO THE INSTITUTION FOR THE BLIND.

(Continued from page 346.)

THE ELASTIC LIGATURE IN SOME CASES OF SYMBLEPHARON.

The more complete varieties of symblepharon are best treated, of course, by transplantation of conjunctival flaps. In other instances, where simple bands or bridles pass from the lid to the ocular surface, division of them is sufficient. There are, again, cases which are intermediate between these, and in several such instances I have found the elastic ligature of service. Some of these were cases in which the fold uniting the eyelid to the globe was loose. A needle threaded with a fine piece of elastic was passed deeply through this fold and tied. In two, three, or four days it had cut its way through and come away. In some cases, though not invariably, this simple procedure was certainly of service. I was induced to use it, in the first instance, some years since, by seeing the opinion expressed that the elastic ligature leaves the surfaces cut by it somewhat thickened and less prone to unite.

EYEBALL TRANSFIXED BY A KNIFE BLADE.

In October, 1879, a young man, aged about 18, was struck while at work by a knife blade, which flew off the wheel on which it was being polished. On being seen shortly after, a vertical wound in the lids, just beyond the external commissure, and in front of the orbital margin, was found. It measured

$\frac{3}{4}$ in. in length. Corresponding to this outer wound, there was one in the adjoining sclerotic, and another on the inner side of the globe, also passing through the tunics of the eye. In fact the blade had transfixed the globe at about the equator, and had remained fixed. It had been necessary to withdraw it. The interior of the eye was filled with blood, and though this subsequently in a measure cleared up, vision was destroyed. The globe remained, to outward appearance, normal. A handle was attached to the blade, the latter being 3 ins. long and $\frac{5}{8}$ in. wide.

LENS DISLOCATED INTO VITREOUS, BECOMING CATARACTOUS, AND UNDERGOING ABSORPTION.

J. C. came to the Infirmary on April 8th, 1880. He had been struck over the eye with a piece of steel. There was a good deal of blood in the interior of the globe. After this had become partly absorbed the lens was seen lying displaced downwards in the vitreous. Whether the lens was opaque or not at this early period my notes do not say; speaking from memory I should say not, but it presently became so. The pupil was kept under atropine throughout the greater part of his attendance, and at the outset potassium iodide was also given. The lens, after it became opaque, was plainly seen, on every movement of the patient's head, to make free excursions in the vitreous cavity; in this way its gradual absorption was easily noticed. The notes state that on August 27th there were signs of absorption taking place; December 3rd, it was decreasing; June 16th, 1881, it was nearly gone; November 4th, 1881, it had entirely disappeared. V. with $+3\frac{1}{2} = \frac{20}{30}$.

AMAUROSIS FUGAX.

Late on the evening of June 21st, 1881, a little girl, (Annie P.,) aged 9, was brought to my house. Her sight had suddenly failed at 9 o'clock in the morning. Her parents, when evening came, were so alarmed at there being no return of sight that they had taken the child from her bed and brought her to me. I then found both pupils widely dilated; no perception of light. The ophthalmoscope did not disclose any abnormality in the fundus. I learnt that a few weeks

before she had complained of pain in the head and dizziness. This, however, soon left her. She again felt poorly a day or two ago, and this morning, at the hour named, she turned suddenly giddy, and went perfectly blind.

For two days the child remained in this totally blind condition; then vision gradually commenced to return, and progressed onward to perfect restoration. She occasionally had attacks of pain in the head, attended with giddiness, as vision was returning.

Bromide, and subsequently iodide of potassium were administered.

On July 26, she read J. 10; August 2, J. 4; 9, J. 1; and a few days later it is also noted that $V = \frac{20}{30}$.

Dr. Glascott has recorded a somewhat similar case in a man (B. M. Journal, 1879, vol. ii., p. 84).

FRACTURE OF ORBITAL PLATE OF SUPERIOR MAXILLARY BONE.

Wm. C., aged 35, fell on Dec. 26, 1879, in the street, and struck his face against the causeway. He says he was insensible for ten minutes. There was pain in the left cheek, and the eyelids became very much swollen. The left side of the face felt numb, and he could not eat on that side for nearly a week. The swelling of the face and eyelids gradually disappeared. On Jan. 16, 1880, he came to me at the Sheffield Infirmary. His condition was then as follows:—There was still a little ecchymosis of the eyeball and lids; on the left side of the face, about half an inch from the inner canthus, a prominence was felt, and was somewhat evident to the eye, running nearly vertically downwards from the lower margin of orbit into, or in close proximity to, the infra orbital foramen. The edge of the fractured bone was quite distinct, and was painful on pressure. There was partial loss of sensation over the parts supplied by the infra-orbital nerve. The prominence of the left cheek seemed somewhat flattened, and a finger introduced into the mouth detected some irregularity in the maxilla above the molar teeth. A month later it was noted that the numbness of the face was much less.

HÆMORRHAGE INTO ORBIT; EXOPHTHALMOS; ATROPHY OF DISC.

Wm. Henry T., aged 15, from Ecclesfield, was admitted into the infirmary on January 1st, 1878. A week previously he had been struck by a large stone over the right eyebrow and forehead. He bled profusely from the mouth and nose. The eyelid became swollen and discoloured, and the next morning the eyeball was noticed to be considerably pushed forward. Iodide of potassium was prescribed, and the protruded eyeball gradually subsided. The disc, however, became white and atrophied, and vision was reduced to light perception.

ORBITAL PERIOSTITIS; EXOPHTHALMOS; ATROPHY OF OPTIC DISC.

Joseph K., aged 8, from Grenoside, came to the infirmary on February 14th, 1879. In the previous October he began to have toothache, and one of the right upper molars was extracted without relief; swelling in the upper part of the cheek, which had then commenced, increased, and the eye became prominent and pushed somewhat upwards. An opening was made into the swelling just below the lower orbital margin, and gave exit to a quantity of pus; the discharge from this opening continued until his coming under my care. After the emptying of this abscess the eyeball became less prominent.

On admission, there was decided exophthalmos, the lids could be closed over the eyeball, but not very readily, and the lower part of the cornea was nebulous as the result of exposure. Movements of eyeball normal. V = light perception, optic disc atrophied. Iodide of potassium and cod liver oil were given for a long period. On December 2nd he finally ceased attending, and on that date it is recorded that "the eye has sunk back to its normal place; the swelling of cheek has subsided; there is a little puckering from the scar below the eyelid."

BLOW ON EYE: INJURY TO OPTIC NERVE.

J. M., aged 25, applied at the Infirmary on January 7th, 1881. He made the following statement: On the night of

the 3rd inst., he was set upon by two men, and struck in the eye, which rendered him senseless for a few minutes. He was picked up and walked home. A wound in the eyelid continued to bleed freely for some time. It was not until the 6th inst. that he was able to open the eye, and he then discovered his inability to see with it. On the 7th, the day he came to the infirmary, the eyelids were very much swelled and discoloured, and there was a good deal of effusion in the ocular conjunctiva. There was a cut about half an inch in length, situated just below the centre of the lower eyelid. The pupil was dilated and sluggish. There was absolutely no perception of light. The ophthalmoscopic signs were negative, but subsequently the disc became white and atrophied. Beyond the subsidence of the swelling of the eyelids, etc., no improvement took place under treatment.

ATROPHY OF OPTIC DISCS AFTER HÆMORRHAGE.

Anne F., aged 46, admitted a patient at the Infirmary on December 9th, 1880. At the time of sight failing she had menorrhagia, which lasted for a month. Both discs are atrophied: left sees J. 20; right, fingers. She remained under treatment a few months with no appreciable alteration in her condition, the treatment consisting of, at different times, liquor strychniæ, tinctura ferri, and potassium iodide.

ATROPHY OF OPTIC DISC AFTER ENTERIC FEVER.

Mary Ann N., aged 10, came to the Infirmary first on January 7th, 1880. Left eye, optic disc white and vessels shrivelled; light-perception: right reads J. 1. The eye suddenly became dark during the time she was ill with typhoid fever, six months ago. Just as bad now as at first. Embolic?

HYSTERICAL PTOSIS.

On October 27, 1880, a young girl, aged 11½, was brought to me under the following circumstances:—On rising, two mornings before, she stated to her friends that she could not open her right eye, and she had not done so since. She was a finely developed girl, looking much older than her age. Six

months previously she had commenced to menstruate, and for a time had done so every fortnight ; now, the period occurred about every month. On examination of the closed eye, there seemed an absence of that smoothing out of the folds of the lid, generally seen in ptosis ; she was able to firmly close the eye when desired to do so, and some resistance was noticed on my trying to separate the lids. There was no paresis of the ocular muscles, and no dilatation of the pupil.

After drawing up the right eyelid, she was desired to fix her gaze at my finger, and after one or two attempts at withdrawing my support from the upraised eyelid, she was astonished to find herself staring steadily with both eyes wide open at the object. She imagined she had wondrously recovered power over the eyelid ! By way of doing something, the eyelid was painted outside with tincture of iodine. Nov. 3rd.—She had been to me in the meantime quite recovered, but to-day was brought with the left eyelid drooping ; she awoke with it in that condition, and was unable to open it. Again she was taken off her guard, after raising the eyelid, in the same manner as before. Nov. 16.—To-day she could not open the *right* eye ; the eyelid had been drooping since yesterday. After getting her to open it as before, she asserted she could not see with it ; neither my fingers nor my features ; a prism, however, held before one eye with the base upwards produced diplopia. The patient dislikes work ; her mother says she likes to sit doing nothing ; she abhors school. I saw the patient once after the last date ; she then remained well and has not since been under my care. Her friends had ceased to be alarmed at her vagaries.

For the notes of hospital cases recorded in this paper I am in great measure indebted to my late clinical assistants, Messrs. Kilham, Coombe, and Banham.

BRIEF REPORT OF THE FOURTEENTH MEETING
OF THE OPHTHALMOLOGICAL CONGRESS
AT HEIDELBERG, SEPTEMBER, 1882.

By J. B. STORY, M.B., DUBLIN.

Intraocular Hæmorrhage in Young Men.—Dr. Nieden read a paper on recurrent idiopathic vitreous hæmorrhage in young people, especially in young men at the age of puberty. He agrees with Gräfe, Eales, Hutchinson, and Schweigger as to the rarity of this affection, and attributes it to a perversion of normal development at the age of puberty, and to no specific cause. Gout, diabetes, syphilis, albuminuria, and hæmophilia were never present. After absorption he was able to determine the origin of the hæmorrhage to have been, in most cases, the chorioidal vessels in the region of the equator of the globe. The results were on the whole favourable, and some cases recovered completely under iodide of potash combined with the red iodide (biniodide) of mercury.

Prof. Schweigger remarked that he had observed similar cases among young women.

Prof. Laqueur added that these cases were usually accompanied by softening of the globe.

Retinal Detachment.—Prof. Leber read a paper on the origin of spontaneous detachment of the retina. After observing that a diminution of vitreous must take place to make room for the retina, he pointed out the unsatisfactory character of the ordinary explanations, such as the supposition of pressure from behind, or cicatricial contraction of the chorioidea, or ectasia of the coats of the eyeball. As the result of his experiments upon the introduction of foreign bodies into the vitreous Leber had frequently found considerable detachment and tearing of the retina, which certainly stood in no direct causal connection with the introduction of the foreign body. This result always followed the introduction of the more easily oxidisable metals, and certain chemical agents, such as sulphate of zinc, produced it also. The first sign of

detachment was always perforation of the retina, so that Leber considers that the penetration of the vitreous fluid behind the retina is to be looked upon as the efficient cause of the subsequent detachment. In the majority of the cases of detachment of the retina in the human eye examined by him, he found this perforation visible. Gräfe long since called attention to perforation of the retina, and Leber has now established its frequency in these cases. The perforation itself is due to a drag from the inside, which takes place in consequence of cicatricial contraction of the vitreous. If this theory be adopted it becomes manifestly absurd to attempt to cure detachment by removal of the subretinal fluid. It would be more rational to divide by a sweep of the knife the fibrous bands in the vitreous.

Prof. Schweigger said that he also had frequently observed perforation of the retina in cases of large recent detachments. (*Vide* Handbook, page 448, where the affection is described.) He is of opinion that most detachments occur very gradually, the patients usually not observing the defect till it has reached a considerable amount.

Dr. Samelsohn advocated the mechanical theory, basing his arguments upon the frequency of antecedent low tension and great depth of the anterior chamber. Even when tension was normal in the front he had found it subnormal in the posterior half of the eyeball.

Profs. V. Becker and Arlt reported cases of sudden detachment of the retina after warm baths.

Trachoma.—Prof. Sattler made a communication upon the origin of trachoma, which he believes to be caused by micro-organisms. His more recent experiments have fully borne out the results he obtained in 1881, which were read before the Heidelberg Congress in September of that year. He has again succeeded in cultivating the micrococci, and producing positive results by inoculation. The organisms are circular, are never seen with zooglæa, but always singly or in pairs, separated by a small interspace. Inoculation of the third generation of a cultivation produced trachoma in the human conjunctiva. These micrococci alone produce trachoma; all other substances used failed to do so.

In the discussion which followed, Baumeister and Kerschbaumer advocated the use of iodoform in contagious conjunctival affections. Samelsohn remarked that he had seen the bacillus of tubercle in tuberculosis of the iris, and Leber that he always now finds micrococci in hypopyon keratitis.

Episcleritis and Spring-catarrh.—Dr. Uhthoff communicated observations upon the pathological anatomy of episcleritis and spring-catarrh (Frühjahrscatarrh). The preparations had been obtained at Schoeler's clinique by removal from the living subject. In episcleritis the vessels were much enlarged; round their sheaths, as also in the subepithelial tissue of the conjunctiva, there lay a thick infiltration of round cells, and in isolated places there were masses of exudation containing numerous cells. The lymph vessels were markedly enlarged. In spring-catarrh there was found an enormous increase in the epithelial layer of the conjunctiva, which sent long processes into the underlying tissues not unlike what occurs in carcinoma. In many places an homogenous brightly refracting band was found immediately underneath the epithelium.

Specimens, Instruments, etc., exhibited.—Prof. Leber and Dr. Uhthoff showed microscopical preparations illustrating the subjects of their papers.

Dr. Story (Dublin) demonstrated the self-registering perimeter invented by Mr. Priestley Smith (*vide* O. R., p. 370). The members present expressed admiration at the simplicity of the instrument, but doubted its being sufficiently cheap for general adoption.

Dr. Story also exhibited some preparations of intraocular tumours, etc., mounted in glycerine jelly.

Dr. Dürr explained the table exhibiting the results of his investigations concerning refraction and accommodation in the higher and lower schools in Hanover.

Dr. Baumeister exhibited a refraction ophthalmoscope.

Prof. Berlin exhibited an instrument for determining the position of the "base-line" in the act of writing. (*Vide* abstract of Berlin's article on the *Physiology of Writing*, in forthcoming number of O. R.)

Dr. Nieden showed a collection of his vulcanite eyes for children and labourers, and observed that he found them most

useful in the post-mortem room to temporarily replace eyeballs which had been removed for the purpose of pathological investigation.

Lens.—Prof. Becker made a communication upon the anatomy of the lens. (*Vide* O. R., p. 417.)

Venous Pulsation.—Dr. Helfreich read a paper upon the venous pulse in the retina, and the intraocular circulation in general. His view is that the venous pulse is produced by the cerebral and not by the intraocular circulation, which directly depends upon the former. The pulsation is synchronous with the cardiac diastole. Experiments have shown that the tension in the cerebral veins is abnormally high, and undergoes pulsating movements in direct relation to the systole of the heart. This pulsation appears in the eye as the venous pulse in the papilla, and is not visible in the rest of the retina in consequence of the firmer connections of the veins to the surrounding tissues. Compression of the jugular stops this pulse immediately. It would be also visible, Dr. Helfreich thinks, in the *venæ vorticosæ* were it not for their large size and very rapid circulation.

Physiology of Writing.—Professor Berlin spoke upon the hygienic advantages of slanting writing (*vide* O. R., forthcoming number). He considered that when the copybook was placed obliquely it was possible to form oblique characters with less muscular exertion than is required to form perpendicular characters.

Prof. Laqueur fully agreed with him, as also did Prof. Manz. The latter condemned the ordinary steel pens as favouring a crooked position of the child by the excessive muscular exertion they occasion.

Prof. Pflüger attributes the stooping of the children to their desire to obtain large retinal images.

Suppuration of Vitreous.—Dr. Haensell made a communication upon the formation of the vitreous humour, and the origin of the pus corpuscles found in it in inflammation. He does not consider the vitreous to be structureless, and believes that the pus cells are the product of the cellular elements which existed in foetal life.

Hernia of Iris.—Prof. Zehender read a paper upon the dangers of peripheral hernia of the iris, and its tendency to produce acute irido-cyclitis afterwards, basing his remarks upon the report by Mr. Swanzy of three cases which occurred respectively twenty years, eight months, and seven years after the formation of the peripheral hernia. He considers the best preventive treatment to be a good iridectomy at either side of the hernia.

Prof. Arlt considers this purulent irido-cyclitis to be due to specific morbid agents brought in contact with superficial abrasions of the epithelium upon the prominent tumour of the iris, and in this opinion Leber agreed with him.

Trichiasis and Entropion.—Prof. Arlt described briefly the operation adopted by Tammamchef for entropion and distichiasis, which consists in splitting the lid from the intermarginal space into an outer and inner plate, and then cauterising the bottom of the wound with nitrate of silver (*vide O. R.*, p. 379). Arlt had seen good results in two cases.

Injections into Optic Nerve.—Prof. Pflüger spoke of his experiments upon the injection of fluoresceine into the optic nerve of dogs and rabbits. Both subdural and subpial injections of one nerve produced fluorescence of both retinae shortly afterwards. He concludes that in the living eye at least there is an easy path for sympathetic affections from one eye to the other.

Glaucoma.—Prof. Pflüger spoke upon the treatment of glaucoma. He believes with Mauthner that total excavation is often merely an optical illusion. He has tried, but never succeeded, in producing an acute glaucoma by atropine, but on two occasions lately saw this unfortunate result. His experiments have proved that in the physiological eye atropine and also pilocarpine lessen tension, while eserine raises it. He agrees with Priestley Smith in holding that eserine and atropine increase or lessen tension in glaucomatous eyes according to their mechanical action in individual cases upon the patency of the filtration paths at the iris-angle. He dilated at length upon the treatment he would use in the different varieties of the disease.

BRIEF REPORT OF THE FIFTY-FIFTH CONGRESS
OF *NATUR FORSCHER UND AERTZE*
IN EISENACH.

SECTION OF OPHTHALMOLOGY.

By J. B. STORY, M.B., DUBLIN.

SEPTEMBER 19TH.—PRESIDENT: PROFESSOR V. ROTHMUND
(MUNICH).

Retinal Changes in Myopic Eyes.—Professor Kuhnt (Jena) made a communication upon this subject, and showed a number of microscopical sections. He considers the changes which take place round the optic disc to be at first limited to a simple extension of the atrophic district which normally surrounds the disc. He has found that in the normal eye there is an absence of the bacillary layer in this position, and also no power of perceiving luminous impressions. In this region, as in the other regions where atrophic changes take place, the chorioidal changes precede the retinal. Professor Kuhnt also mentioned that he had observed certain peculiar alterations in the chorioidea and the outer retinal layers in myopic eyes, which he believed had not been hitherto described.

Discussion upon the Treatment of Sympathetic Ophthalmitis, when the primarily affected Eye is completely blind.—The almost unanimous opinion of the members was that the first step in the treatment should be to enucleate the blind eye, following it up with an energetic use of measures directed against the inflammation.

Prof. Rothmund mentioned that he had observed a case of well-marked sympathetic chorioiditis where not the slightest changes were discoverable in the iris, and he also stated, as a point of some interest in connection with the present theories upon the causation of sympathetic ophthalmitis, that he had not infrequently found the optic nerves perfectly normal in eyes which had produced absolute blindness sympathetically.

Dr. Uhthoff, in reply to Prof. Kuhnt, stated that he had never seen in Prof. Schoeler's clinique any cases of sympathy

after optico-ciliary neurotomy, although the operation had been frequently performed there during several years past; but he had often noticed a return of sensibility after the operation. Prof. Schoeler does this operation at the present time.

Prof. Rothmund is of opinion that one of the most important practical points in treating a patient who has lost one eye is to see that no work of any kind is attempted for at least six months after the injury. He considers that the accommodative strain is one of the most powerful agents in the causation of sympathetic ophthalmitis.

WEDNESDAY, SEPT. 20TH.—PRESIDENT: DR. WALDHAUER (MITTHAW).

Kerato-mycosis with Hypopyon.—Dr. Uthhoff made a communication on this subject, accompanying it with numerous beautiful microscopic sections from the case in question. This is the first case which has been published since Prof. Leber's in von Gräfe's Archives in 1879.

Perimeter.—Dr. Uthhoff also exhibited a concave metal disc, which he fixes on Forster's perimeter to facilitate the accurate measurement of the central portion of the field of vision.

Attitude of School Children.—Dr. Stimmel (Leipzig) exhibited an apparatus for making school children hold their heads upright, and at a sufficient distance from their work. In the subsequent discussion much doubt was expressed as to the value of any such mechanical contrivances.

Peculiar Retinal Disease.—Prof. Kuhnt (Jena) described what he considered to be a peculiar disease of the retina, which he had observed for the first time in a young girl. There was contraction of the visual field, and V was reduced to $\frac{1}{6}$ th, but the only ophthalmoscopic appearances were minute white spots in the inner retinal layers, which could only be seen in the erect image. He had since then twice seen a similar ophthalmoscopic appearance.

Treatment of Diseases of the Lachrymal Sac.—A discussion on this subject was opened by Prof. Kuhnt. He was in favour of destroying the sac in those chronic cases where there exists a thickening of the mucous membrane, and he stated, as the result of his experience in Jena, that, in the milder cases where

destruction of the sac is not indicated, Becker's method of dilating the canaliculi by conical sounds is not to be preferred to the usual slitting of these passages.

Prof. Rothmund stated that in recent cases of acute inflammation he opens the sac and uses iodoform; in chronic cases he divides the upper canaliculus and probes; and when the bones are diseased he extirpates the sac.

Hypopyon Keratitis.—Prof. Kuhnt said that in recent cases of this disease he had recourse early to the actual cautery, using at the same time various antiseptic agents, such as boracic acid, aqua chlori, weak corrosive sublimate solution, powdered iodoform, etc. In seven cases he has had excellent results from Saemisch's operation; he has not yet tried massage.

Prof. Rothmund called attention to the not infrequent occurrence of cataract after Saemisch's operation, probably induced, he thinks, by the contact with air.

THURSDAY, SEPTEMBER 21ST.

Specimens: Perimeter.—Dr. J. B. Story demonstrated a series of preparations mounted in glycerine jelly. At the request of the members he described the method of preparing the jelly, and mounting the specimens. He also exhibited a new registering perimeter (*vide* O. R., p. 370).

Dr. Uthhoff exhibited microscopic sections from a case of spring catarrh, and also from one of episcleritis (*vide* O. R., p. 407).

Trichiasis and Entropion.—Dr. Waldhauer read a paper upon the operations employed for the cure of these conditions, of which he has had a vast experience in his practice in Russia. The operation he had been led to adopt consisted in a combination of Arlt's transplantation with Reverdin's skin grafts. Dr. Waldhauer uses the excised piece of skin to form small grafts, which he places in the spot left bare by the uplifting of the ciliary bridge.

In the discussion which followed, Prof. Kuhnt stated that he modified Arlt's operation in the manner described by Gayet in the *Annales d'Oculistique* of last year.

Dr. Story (Dublin) called attention to the exact similarity of Gayet's operation to that described some ten years earlier by the English oculist, Mr. Spencer Watson.

SCHOELER AND UHTHOFF (Berlin). Fluorescine and the Interchange of Fluids in the Eye. *Jahresbericht über die Wirksamkeit der Augen-Klinik von Prof. Dr. H. Schoeler im Jahre, 1881. Berlin, 1882, p. 52.*

A solution of fluorescine so diluted as to be completely colourless in transmitted light, appears by reflected light brown, grass-green, or yellow-green, according to the degree of dilution; the fluorescine is said to be still perceptible when the dilution reaches two million parts to one. It is innocuous. Introduced into the circulation by subcutaneous injection it imparts a visible coloration to the secretion-streams in the living and intact eye, and thus affords a new and most valuable means of investigation. The originator of this method was P. Ehrlich (*vide Deutsche medicin. Wochenschr. January, 1882, 1-3; and Centralbl. f. prakt. Augenheilk. March, 1882*).

Following up this line of experiment Schoeler and Uththoff have made a series of important observations. They employed the substance uranin—an ammoniacal compound of fluorescine—dissolved in five times its weight of water. This solution was, in different experiments, injected into the vitreous, injected beneath the skin, and dropped into the conjunctival sac of rabbits. The quantity used for subcutaneous injection was usually three cubic cm. of the solution. The eyes were examined by reflected light and ophthalmoscopically in the living animal, and by dissection after excision.

Injection into the vitreous chamber caused not only an intense coloration of the whole of the vitreous body, but, after an interval varying from half-an-hour to four hours, a coloration of the aqueous fluid and the cornea. Sometimes the colour became visible also at the limbus of the cornea, and passed along the conjunctiva, especially opposite to the insertions of the four recti muscles. The conjunctiva lost the colour again at the end of a few hours, but in the aqueous it remained visible from twelve hours to three days. Coloration of the lens became visible as the aqueous cleared, and persisted for weeks and even months. The duration of the colour in the vitreous varied much, according to the amount injected—as a rule, six to eight days.

Puncture of the cornea after vitreous injection caused a much more rapid appearance of the colour in the aqueous

chamber, and there was not a mere coloration of the aqueous fluid, but masses of a thicker exudation came forwards from behind the iris and sank to the bottom of the chamber. The disappearance of the colour, especially from the vitreous, was also much more rapid than when no puncture of the cornea was made.

Cases were met with, however, both with puncture of the cornea and without, in which the vitreous injection was not followed by any coloration of the aqueous or lens. Coloration of the lens never occurred without previous coloration of the aqueous, even though the vitreous were intensely coloured quite up to its anterior limit.

Subcutaneous injections also produced well-marked colouration in the eye. From four to ten minutes after the injection the colour appeared in the area of the pupil in the form usually of a more or less vertical line. This line, observed and described by Ehrlich, was supposed by him to indicate the existence of two special foci of secretion upon the surface of the iris at opposite points of the circle; but the authors convinced themselves by repeated and varied observations that the colour came into the anterior chamber, in all cases, through the pupil, and that the anterior surface of the iris had no part in the secretion-process. The formation of Ehrlich's line and the variations in its form, position, etc., are to be ascribed to differences in the force with which the currents emerge from behind the iris at different parts of the circle, and to their making their appearance earlier at some points than at others.

Dissection of eyes excised at various periods after the subcutaneous injection, from the moment of the first appearance of the colour in the pupil to the time of its total disappearance, afforded a further insight into the secretion-process. Simultaneously with or immediately after the coloration of the pupil, some of the furrows between the ciliary processes were found tinged with green; these green lines grew narrower in the direction of the equator of the eye, and ended off sharply at the posterior limit of the processes. The exudation of the colour was freest at the anterior part of the furrows opposite to the lens margin. An hour after the appearance of colour in the pupil, there were in addition radial

lines of colour on the posterior surface of the iris, and in cases where these were not apparent on the surface, removal of the pigment revealed an intense coloration in the vascular layer. A little later still the fluorescence was discoverable also in the cortex of the lens, the zonula, and the anterior part of the vitreous. At the end of three hours it was usually no longer visible in the processes of the iris, though the vitreous might still be coloured throughout its entire substance, and later than four hours the lens and vitreous also were again completely free.

The choroid was never coloured, and neither after subcutaneous injections nor after direct injections into the vitreous was any fluorescence discoverable in the optic nerve or its sheaths. With regard to the presence of coloration in the retina, the authors make no assertion, but reserve the point for further observation.

The foregoing observations demonstrate, the authors maintain, that the ciliary processes and the posterior surface of the iris secrete a fluid which fills the aqueous chamber and nourishes the lens and vitreous body; also that, under the artificial conditions produced by injections into the vitreous, fluid may pass from the vitreous, through the zonula, into the aqueous chamber. But from the fact that in some cases of such injection the aqueous remained entirely uncoloured, they infer that under normal conditions there is no transit of fluid from the vitreous to the aqueous. This latter inference is, we think, one which cannot be accepted as it stands; for, putting aside a considerable amount of evidence which points to the existence of such a current, there is the fact that in no case could the authors discover any sign of the colour having passed from the vitreous into the choroid or optic nerve; and the further fact, pointed out by them, that the waste fluid of the vitreous does not appear to be reabsorbed by the vessels of the ciliary processes. This is all in favour of the view, now pretty generally accepted, that it passes through the zonula to mingle with the aqueous fluid. (*Vide* O. R., p. 249.)

With regard to the lens, the authors conclude that its nutrition is entirely independent of the vitreous fluid. In the case of artificial injections into the anterior chamber, fluid may enter the lens through the anterior capsule, but under physiological conditions its nutrient supply enters in the region of

Petit's canal. The interchange of fluid in the lens appears to be much slower than in any other of the ocular structures.

By further experiment the authors were able to demonstrate alterations in the secretion-processes in certain morbid conditions of the eye. Thus, when the escape of the aqueous was retarded by cauterisation of the corneal limbus a more intense impregnation of the vitreous ensued; and in like manner ligation of the vortex-veins previous to the subcutaneous injection increased the intensity of the fluorescence in vitreous, lens, processes, and iris. On the contrary in an eye in which the vessels of the ciliary processes had become atrophied or destroyed in consequence of previous cyclitis, no colour entered the anterior chamber through the pupil, and on section the atrophied processes were almost entirely destitute of coloration.

The influence of the nerves on the secretion of the intraocular fluid was also investigated with definite results. Division of the cervical sympathetic either with or without excision of the superior cervical ganglion, performed previously to the subcutaneous injection, greatly accelerated the exudation of coloured secretion into the chamber. On the operated side there was a rapid appearance of flocculent masses of intense colour like that witnessed after puncture of the cornea; a visible portion of the circulus iridis major was greatly increased in calibre. On the non-operated side the coloration occurred gradually, with the formation of Ehrlich's line as under ordinary circumstances. From this the authors infer that the secretion of the intraocular fluid is under the influence of the sympathetic, the amount being increased and the quality altered by suspension of vascular tonicity.

In one case the anterior root of the first cervical nerve was divided completely, that of the second partially. This was followed by arterial dilatation in the ear and extreme myosis, as in other cases of paralysis of the sympathetic, but the secretion process, as rendered visible by subcutaneous injection of fluoresceine, remained unaffected. From this it would seem that the secretory and pupillary fibres of the sympathetic are distinct from each other, and leave the spinal cord by different paths. As fluoresceine is innocuous it will perhaps afford the means of diagnosing vaso-motor neuroses in the human eye.

Such a diagnosis, difficult under any circumstances, has hitherto, in the absence of characteristic pupil changes, been impossible.

Division of the fifth nerve at the Gasserian ganglion produced, in addition to total anæsthesia of cornea, conjunctiva, etc., an intensification of the secretion-process in the eye of that side even greater than that which followed division of the sympathetic. In one instance, however, the secretion process remained unaltered—*i.e.*, equal to that in the eye of the non-operated side, and here it was found on section that the division of the ganglion was incomplete, its middle fibres remaining intact. These middle fibres appear, therefore, to be those which influence secretion in the eye.

When the harmlessness of the substance and the dose suitable for the human subject shall have been well-established, the authors hope to gain some valuable clinical information by the aid of fluorescein.

OTTO BECKER (Heidelberg). On the Anatomy of the Healthy and Morbid Lens. *Centralbl. für prakt. Augenheilk.*, May, 1882, p. 129.

This preliminary article summarises the results of recent researches carried out by Becker and his assistants, J. R. da Gamo-Pinto and H. Schaefer. The following is an abridged translation:—

1. In lenses from calf-embryos, young pigs, and children, it is observable that indirect division of nuclei plays a part in the growth of the capsular epithelium.
2. The cell-proliferation takes place at scattered spots over the whole inner surface of the anterior capsule. In the pig there appears to be a zone of special activity near the equator. In the nuclei of the fibres nothing resembling a process of division is discoverable.
3. In the last months of embryo-life, and after birth, the lens grows, as is well known, by the laying down of fibres formed from the cells at the equator. The youngest fibres form the recurved layers at the equator (*linsenwirbel*), their nuclei the nuclear zone. The older fibres are pressed towards the centre by the new; their nuclei gradually perish; the fibres

themselves become longer, narrower, and flatter, acquire teeth, and change their index of refraction. The process is, however, liable to many variations: *a.* In normal human lenses at various periods of life fibres with well-preserved nuclei are often discoverable deep in the substance of the lens—near to the anterior and posterior poles as well as to the equator. *b.* Sometimes the fibres do not decrease regularly in thickness towards the centre of the lens; between the ordinary layers are others composed of thicker and even of swollen fibres. *c.* The direction of the fibres is not uniformly meridional, so that sections which follow the majority lengthwise cut some bundles obliquely. *d.* The stellate disposition also is variable; it is seldom that a ray can be traced without interruption to the centre. *e.* In man and animals (pig and cow) spaces occur between the layers, spindle-like in form, meridional in direction, and containing a finely granular substance of different refraction from the fibres, and of different behaviour towards colouring agents.

4. As stated in the books, the anterior capsule is in general thicker than the posterior; but in young lenses which are still growing the capsule is thickest a little way behind the equator.

5. In the new-born the height of the capsular cells at the anterior pole equals the thickness of the capsule, while towards the equator their height increases. With advancing age the thickness of the capsule increases more rapidly than the height of the cells. Later, the cells shrink, and in old age little more than their nuclei can be seen on the inner surface of the capsule.

6. Characteristic changes occur with advancing age at the equator also. In the new-born the last formed fibre reaches forward anteriorly to the first adjacent cell, the second to the second, and so on; but, later on, the fibres reach farther and farther forward, so that the youngest may reach to the tenth, or twelfth, and ultimately even to the thirtieth or fortieth cell.

7. The diminution in the height of the capsular-cells must be attributed to an increase of intra-capsular pressure due to the growth of the lens substance. When an equilibrium is reached between the growing force of the new fibres and the resistance of the capsule, the growth of the lens ceases.

8. With advancing sclerosis of the fibres the lens substance shrinks, and the capsule, being tightly stretched in the equatorial direction by the suspensory ligament, is unable to follow it, hence the equatorial fibre-layers tend to separate from each other, causing at first an apparent, and later a real opacity near the periphery (incipient cataract). Moreover, the cells and fibres at the equator, being relieved from pressure, begin, such as have nuclei still living, to grow again.

9. Capsular cataract is due to the growth of cells near to the anterior pole. Some of these send out long fine hyaline processes between the capsule and the epithelium, raising the latter from it over considerable areas. Occasionally the capsule itself seems to be penetrated and split into layers.

10. In the further development of capsular cataract this process repeats itself, successive layers of new substance being formed from the epithelium and deposited upon the inner surface of the capsule.

11. Congenital membranous cataracts, especially the anterior polar kinds, including pyramidal cataract, are formed in this way. The structure is the same whether the capsular cataract is primary or secondary to other forms.

12. Another product of the rearoused cell-growth is the large bladder-like cells which are found in nests near to the equator in all forms of senile cataract, except the black. They are formed directly from the cells of the anterior capsule, and indirectly from the morbid cells sometimes found lining the posterior capsule.

13. As H. Müller has stated, the posterior capsule of the cataractous lens sometimes has an epithelioid lining. These cells are probably formed from the normally existing equatorial cells. Their disintegration probably supplies the fluid of the Morgagnian cataract.

14. The chalky deposit in capsular cataract is always situated at first in the interstices surrounding the atrophying cells.

15. It is already known that certain forms of congenital cataract arising at a very early period of foetal life are associated with, and probably caused by, persistence of the hyaloid artery. It appears that in other forms of congenital cataract a dis-

turbance of nutrition occurs after the development of the lens is complete, causing the capsule to take up an excess of fluid, and thus to become separated from the lens substance; the latter is then gradually dissolved by the fluid, and the capsule either ruptures or gets rid of the contained fluid by osmosis, and a shrunken membranous cataract remains, consisting of wrinkled capsule, capsular deposits, and the large cells already referred to.

16. Soft cataract in young subjects, when not associated with capsular cataract, presents no proliferation of the capsular cells. A diabetic cataract in a girl, examined on the death of the patient, exhibited as the cause of the opacity nothing but a number of very fine interspaces due to separation of the fibres from each other.

17. The intra-capsular changes which occur in adherent cataract (cat. accreta) do not differ from those met with in simple senile cataract.

(On this subject, see also Deutshmann, O. R., p. 88, and Leber, O. R., p. 128).

W. J. MILLES (London). Sympathetic Ophthalmitis following Extraction of Cataract. *Roy. Lond. Ophth. Hosp. Reports, X., iii., p. 325, August, 1882.*

Among the large number of cases which have come under his notice as House Surgeon to the Royal London Ophthalmic Hospital, the author has observed eleven cases of undoubted sympathetic ophthalmitis after cataract extraction. He records them in detail, and summarises their leading characteristics.

Sex and Age.—Of the eleven patients five were men, six women. The ages ranged from 52 to 76, the average being 65.

The operation was Graefe's modified linear in each case; the extremities of the section were within the cornea, except in one case, where puncture and counter-puncture were both in the sclera; and in one other, where counter-puncture was far back in the sclera.

Accidents during Operation.—In six cases no complication occurred. In two some soft lens matter was left behind. In one the iris was partially torn from its attachment. In one

the cataract had to be removed by the scoop with slight loss of vitreous. In one the notes of the operation were lost.

Results in operated Eye.—In two cases there was simply a small incarceration of iris in the corners of the corneal section, with good vision. In one a dense membrane and posterior synechia formed as a result of iritis. In two iris and capsule were adherent to the wound. In two the pupil was drawn up and closed by membrane. In one there was suppurative iritis, without pain. In three there was suppurative irido-cyclitis, followed by shrinking of the globe.

The interval between the extraction and the onset of the sympathetic ophthalmitis was, as a rule, two to three months, the shortest being six weeks, the longest fifteen months.

Keratitis punctata being, in the author's experience, almost invariably present in sympathetically inflamed eyes, was carefully looked for and was found in every case. A very minute examination with a lens was sometimes necessary to detect the dots. They occur at an early period of the disease, and this favours the opinion expressed by Brailey that the disease begins as uveitis serosa. The dots tend to constantly increase in number, and may coalesce so as to form a large plaque; this may ultimately be absorbed, leaving only a few traces behind. In three cases the dots were found in both eyes; they presented themselves first in the exciting eye.

Tension in the sympathising eye varied from time to time—one day normal, the next increased. This seems to be one of the characteristics of sympathetic inflammation. In only one case was the tension normal throughout, and in this one there was no pain or tenderness in the eyes at any time.

Vision.—In several cases excellent vision, e.g., $\frac{20}{20}$, $\frac{20}{50}$, $\frac{20}{30}$, was retained in the exciting eye. The severity of the sympathetic inflammation bore no proportion to the damage in the exciting eye. The final results in the sympathising eyes were not yet determinable. In some patients re-examined after several months, active changes were still going on. In one case sclerotomy, performed for the relief of a very painful glaucomatous condition, relieved the pain, but was not otherwise satisfactory.

In the Transactions of the American Ophthalmological Society for 1880, at page 19, may be found a group of cases of this same kind, recorded by David Webster. These also are eleven in number. The final results were as follows :—

In four cases both eyes were lost.

In one the exciting eye was lost, the sympathising eye badly damaged.

In one the exciting eye was lost, and the sympathising eye recovered in good condition.

In one the exciting eye recovered with a drawn-up pupil and perception of light, and the sympathising eye recovered with only slight damage.

In one the exciting eye retained useful sight, and the sympathising eye was operated on with promise of good result, when the patient died.

In two both eyes recovered in good condition.

In one the sympathising eye was lost, while the exciting eye retained good vision.

X. GALEZOWSKI (Paris). A Refraction-Ophthalmoscope with Bi-focal Mirror. *Recueil d'Ophth.*, July, 1882, p. 437.

For the examination of the fundus by the indirect method (inverted image) a mirror of at least 25 cm. focal length is desirable, while for the direct method some oculists prefer a much shorter focus. A large hole in the centre of the mirror used for the indirect method does not sensibly impair the illumination, consequently this central area may be replaced by a small mirror of shorter focus, and the compound mirror thus formed will be equally applicable for both purposes.

In Galezowski's new ophthalmoscope the small central area of the mirror has a focal length of 8 cm., the remainder 25 cm. The mirror can be inclined to the axis of the lenses. There are thirty-three lenses, each 4 mm. in diameter, placed in an outer and an inner circle, and adjustable in the same way as in Gowers's ophthalmoscope. The handle is hinged, and folds over the mirror so as to protect it.

The maker is Roulot, of Paris. The price is not stated.

This Journal closes its first year, sadly, by recording the death of one who was almost the first to encourage and help it into existence.

GEORGE CRITCHETT, F.R.C.S.,
DIED NOVEMBER 1ST, 1882,
AGED 65 YEARS.

Well trained in general surgery by years of laborious work, he devoted himself in his maturity entirely to ophthalmic practice. A skilful and careful observer, an ingenious and brilliantly successful operator, an untiring worker, he became eminent among ophthalmic surgeons, and famous in his own country and beyond it. By his death, we of his calling lose an accomplished leader and a genial and hospitable friend.

RECENT LITERATURE.

A. RETINA. OPTIC NERVE. CENTRES.

ABADIE. Considérations nouvelles sur la rétinite dite albuminurique. (Communication faite à la société de médecine de Paris, 24th June, 1882.)

L'Union Médicale, 1882, Nr. 141, p. 627.

DRANSART. Du nystagmus et de l'héméralopie chez les mineurs.

Ann. d'Oculist, September—October, 1882, p. 150.

FUCHS. Sinneswahrnehmungen and Sinnestäuschungen. (Popular.)

Vom Fels zum Meer, October, 1882.

GAMA LOBO. Méthode suivie au laboratoire de M. le Professeur Donders pour découvrir la cécité des couleurs.

Recueil d'Ophth., September, 1882, p. 513.

HOESCH. Ueber Erkrankungen der Gefässwandungen in der Retina, insbesondere von Erysipelas faciei. Inaug.-Diss.

Berlin, Draeger, 1882.

KOLBE. Ein Fall von angeborener einseitiger Rothgrüschwäche.

Centralbl. f. pr. Augenh., October, 1882, p. 291.

KRIES, VON. Die Gesichtsempfindungen und ihre Analyse.

Arch. f. Anat. und Physiol., Phys. Abth. Supplementband.

MAYERHAUSEN. Zur Kenntniss der Erythropie.

Wiener med. Presse, 1882, Nr. 42.

MICHEL. Bericht über das Vorkommen der „Nachtblindheit“ im Arbeitshause Rebdorf.

Aerztl. Intelligenzblatt, Munich, Nr. 30.

RAMPOLDI. Amaurosi unilaterale (isterica?) senza reperto oftalmoscopico visibile. Guarigione dopo tre mesi di cura.

Annal. di Ottalm. XI., 4, p. 327.

REICH. Verlust des Sehvermögens wegen Papillitis bei einer Schwangeren; rasche Genesung bei ärztlichem Eingreifen.

Klin. Mon.-Bl., October, 1882, p. 349.

B. UVEAL TRACT. VITREOUS AND AQUEOUS. LENS.

ABADIE. De certaines complications consécutives à l'opération de la cataracte, et des moyens d'y remédier.

Ann. d'oculist, September—October, 1882, p. 136.

- DRIVER. Zur Symptomenlehre und Behandlung des Glaucoma acutum. Inaug.-Diss.
Berlin, 1882, Gustav Lange.
- HAENEL. Ueber Glaucom.
Jahresber d. Ges. f. Nat. und Heilk. in Dresden, 1881—1882, p. 30.
- HIRSCHBERG. Zur Prognose des Aderhautsarcoms.
Virchow's Archiv., XC., 1882.
- MOYNE. Scollamento dell' iride.
Bolletino d'Oculist, V. I., p. 1.
- PROUET. Trois observations de cataracte zonulaire.
Revue d'Oculist du Sud-ouest., Nr. 8, p. 172.
- RUNGE. Die Veränderungen der brechenden Medien des Auges bei macerirten Früchten.
Berl. Klin. Woch., Nr. 34.
- SULZER. Die Iridectomy bei primärem Glaucom. Inaug.-Diss.
Zurich, 1882. Heinrich Zürcher.
- TALKO. Ein Fall von membrana pupillaris perseverans utriusque oculi.
Klin. Mon.-Bl., October, 1882, p. 346.

C. CORNEA. CONJUNCTIVA. SCLERA.

- ABADIE. Quelques mots à propos du traitement de la conjonctivite granuleuse.
Ann. d'Oculist, September—October, 1882, p. 145.
- DIMMER. Angiom der Conjunctiva bulbi.
Prager med. Woch., Nr. 33 and 34.
- DRANSART. Conjonctivite purulente et conjonctivite catarrhale, par cause rhumatismale.
Ann. d'Oculist, September—October, 1882, p. 149.
- FONTAN. Un cas d'ophtalmie diphthéroïde,
Recueil d'Ophth., September, 1882, p. 520.
- HAENEL. Ruptur des Bulbus oculi. Perforirende Wunde der Sklera.
Jahresber d. Ges. f. Nat. und Heilk. in Dresden, 1881—1882, p. 30.
- KOENIGSTEIN. Zur Prophylaxe der Blennorrhoea neonatorum.
Arch. f. Kinderheilk. III., 9 und 10.
- Egyptian Ophthalmia.
Brit. Med. Jour., October. 1882, p. 811.

D. ACCOMMODATION. REFRACTION. MOTOR APPARATUS.

- ALBRECHT. Statistische Beiträge zur Lehre von der Myopie.
Klin. Mon.-Bl., October, 1882, p. 342.
- ALBERTOTTI. Experimentelle Messung des verkehrten ophthalmoscopischen Bildes.
Klin. Mon.-Bl., October, 1882, p. 335.
- HIRSCHBERG. Zur Dioptrik und Ophthalmoscopie der Fisch- und Amphibienaugen.
Archiv. f. Anat. und Physiol., *Physiol. Abth.*, 1882, p. 493.
- HIRSCHBERG. Refraction.
Eulenburg's Real-Encycl. d. ges. Heilk., 1882.
- LOISEAU. Application à l'examen des hommes de guerre, du procédé de détermination de la réfraction dit Kératoscopie.
Ann. d'Oculist., September—October, 1882, p. 156.
- MAYERHAUSEN. Zifferntafeln zur Bestimmung der Sehschärfe nach der Snellen'schen Formel $v = \frac{d}{D}$.
Echelles typographiques en chiffres arabes pour déterminer l'acuité visuelle d'après la formule de Snellen $v = \frac{d}{D}$.
Berlin, 1882. Hermann Peters.
- MITTENDORF, W. F. Myopia and the necessity of its correction with glasses.
N. Y. Med. Record, October, 1882, p. 415.
- RAMPOLDI. Sulle cause meno frequenti dell' astenopia d'accommodazione.
Annali di Ottalm. XI., 4, p. 318.
- REUSS, VON. Schulbankfrage.
Eulenburg's Real-Encyclop., XII., p. 238.
- SCHULTEN. Ueber die Beobachtung des Augenhintergrundes unter hochgradiger Vergrößerung.
Arch. f. Anat. und Phys., *Phys. Abth.*, p. 285.
- VELARDI. Dell' astenopia accommodativa—(continued).
Bolletino d'Oculist., V. I., p. 14.

E. EYELIDS. LACHRYMAL APPARATUS. ORBIT.

- ABADIE. Traitement du blépharospasme par le massage forcé du muscle orbiculaire.
Gazette des Hôpitaux, 1882, Nr. 116, p. 925.

ARMAIGNAC. Sur les conséquences et la gravité des plaies du sourcil.

Revue d'Ocul. du Sud-ouest, Nr. 8, p. 165.

BLEICHER. Pediculus pubis (Phthirius inguinalis) in den Cilien kleiner Kinder.

Wiener med. Woch., Nr. 32.

BUSINELLI. Sulla tarsorafia preventiva.

Bolletino d'Oculist. V. I, p. 20.

DIANOUX. De l'autoplastie palpébrale par le procédé de Gayet.

Ann. d'Oculist, September—October, 1882, p. 132.

DRANSART. Guérison du ptosis par des procédés opératoires spéciaux.

Ann. d'Oculist, September—October, 1882, p. 147.

KOENIG. Ueber Empyem und Hydrops der Stirnhöhle. Inaug.-Diss.

Bern, 1882, Stämpfli.

LLOYD, W. E. A case of intra-orbital aneurism following fracture of the anterior fossa of the base of the skull and meningitis; ligature of the common carotid six days after accouchement; extirpation of eyeball; recovery.

Lancet, November, 1882, p. 799.

MISES. Ueber die Nerven der menschlichen Augenlider.

Sitzungsbericht der K. K. Acad. d. Wiss., Vienna, 1882.

VAN DUYSE. Bride Dermoïde oculopalpébrale, colobome partielle de la paupière avec remarques sur la genèse de ces anomalies.

Ann. d'Oculist, September—October, 1882, p. 101.

F. MISCELLANEOUS.

AYRES, W. C. The development of the eye, IV.

N. Y. Med. Journal, November, 1882, p. 467.

DANESI. Un caso di lagofalmo da paralisi del facciale curato colla faradizzazione.

Bollet. d'Ocul. V. I, p. 7.

DREWES. Ein Beitrag zur Statistik und Diagnostik der syphilitischen Augenerkrankungen.

Berlin, Dräger.

DUYSE, VAN. Macrostomes congénitaux avec tumeurs préauriculaires et dermoïde de l'oeil.

Ghent, 1882.

- FALCHI. Tuberculosi dell'occhio per inoculazione—(continued).
Annali di Ottalm. XI., 4, p. 277.
- FISCHER. Ueber das Iodoform in der Augenheilkunde.
Mittheilungen des Vereins der Aerzte in Steiermark,
1881. Vienna.
- KOLBE. Untersuchungen auf Farbenblindheit in Russland.
Wratsch, 1882. Nr. 28 and 32.
- MANDELSTAMM. Ein Fall von Microphthalmus congenitus.
Centralbl. f. pr. Augenh., October, 1882, p. 289.
- PANAS. Blépharospasme hystérique traité par l'élongation du
nerf sus-orbitaire.
Semaine Méd., March 2nd, 1882.
- PANAS. Indications et contreindications de l'emploi de l'eau
dans les affections de l'oeil.
Journ. de Méd., April 29th, 1882.
- PINI. Oculistica elementare.
Bolletino d'Oculist, V. I., p. 10.
- PRIDEAUX, E. Penetrating wound of the orbit, involving
the brain.
Lancet, November, 1882, p. 846.
- PUFAHL. Die Augen der Vögel.
*Zeitschrift des Verbandes der ornithol. Vereine Pom-
merns und Mecklenburgs*, Nr. 5—7.
- SCHENKL. Die neuern therapeutischen Versuche in der
Augenheilkunde.
Prager med. Woch., Nr. 32.
- SCHENKL. Die neueren therapeutischen Versuche in der
Augenheilkunde.
Prager med. Woch., Nr. 30.
- SZIKLAI. Anophthalmia bilateralis congenita mit nachträglicher
Entwicklung der Bulbi.
Wiener med. Woch., Nr. 32.
- YVERT. De l'extraction des corps étrangers du globe de l'oeil
(morceaux de fer ou d'acier) au moyen de l'aimant—
(concluded).
Recueil d'Ophth., September, 1882, p. 527.
- Reglement voor het gezichtsonderzoek bij de Deensche
marine.
Weekblad, 1882, Nr. 28.

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